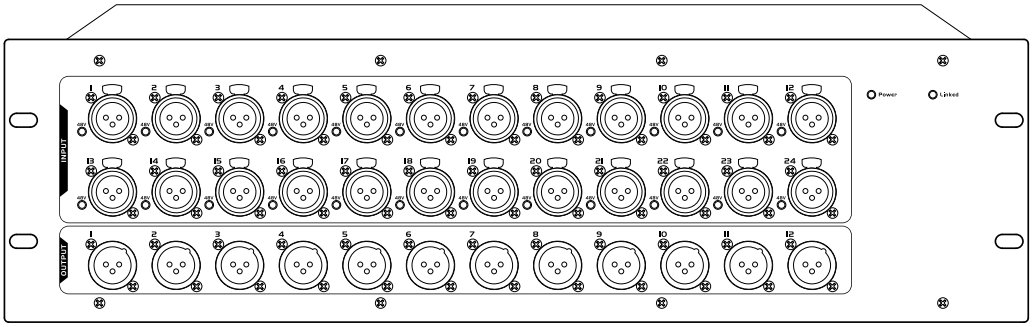
User's Manual

DIGITAL SNAKE SYSTEM



Important Safety Instructions

This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.

This symbol, wherever used, alerts you to important operating and maintenance instructions.

Please read.

~ Alternating currert/voltage (for adapter).

ON: Denotes the product is turned on.

OFF: Denotes the product is turned off.

WARNING
Describes precautions that should be observed to prevent the possibility of death or injury to the user.

CAUTION
Describes precautions that should be observed to prevent damage to the product.
Disposing of this product should not be placed in municipal waste but rather in a separate collection.

WARNING
Power Supply
Ensure that them a inssource voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user. Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

External Connection
Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

Do Not Remove Any Covers
Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed. Covers should be removed by qualified service personnel only.

No user serviceable parts inside.

Fuse (for adapter).
To prevent fire and damage to the product, use only the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

Operating Conditions
Always install in accordance with the manufacturer's instructions.
To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture.
Do not use this product when in close proximity to water.
Do not install this product near any direct heat source.
Do not block areas of ventilation. Failure to do so could result in fire.
Keep product away from naked flames.

IMPORTANT SAFETY INSTRUCTIONS
Read these instructions
Follow all instructions
Keep these instructions. Do not discard.
Heed all warnings.
Only use attachments / accessories specified by the manufacturer.

Cleaning
When required, either blow off dust from the product or use a dry cloth.
Do not use any solvents such as Benzol or Alcohol.
For safety, keep product clean and free from dust.

Servicing
Refer all servicing to qualified service personnel only.
Do not perform any servicing other than those instructions contained within the User's Manual.

PORTABLE CART WARNING

Carts and stands - The component should be used only with a cart or stand that is recommended by the manufacturer.
A component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the component and cart combination to overturn.

Table of Contents

These product are for professional use. They can be used in following electromagnetic environment: residential, commercial and light industrial, urban outdoors. They are intended for rack mounting. When under the EM disturbance, the ratio of signal-noise may be changed above 3dB.

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.

FCC Statement:
"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.

1 Introduction

Thank you for purchasing the Digital Snake System. Up to 100-meter or more than 1000-meter transmission distance can be reached when using the CAT5 cable or fiber cable separately. It delivers uncompressed digital audio in high quality, extra low noise and real time through a standard Ethernet network. The audio transmission function can be set with professional software and stored in the device for independent usage so that it makes usage more flexible and affordable. All of signals will be transmitted through digital Ethernet network so that it can avoid the distortion issue caused by sending analog signal. It can help to save the cost for installation and maintenance as the unit is suitable for any situation and transmits signal through Ethernet network. Also the unit also can be controlled remotely through discovering software.
It is recommended that you read the manual of this machine carefully before use in order to familiarize yourself with the features applications and operation procedures and avoid some problems during furtuer installation and operations.

2 Features

- 24 MIC analog inputs / 12 XLR analog outputs.
- 48V phantom power control and power indicator.
- 0dB～50dB input digital gain control.
- 100～240V wide voltage switching power.
- Up to 24 inputs for T-DANTE / 12 output network real-time transmission of digital signals & multiple expansions. Support to modify the device ID with PC software.

3 Useful Data

Please write your serial number here for future reference.

Serial Number:
Date of Purchase:
Purchased at:

Function Introduction

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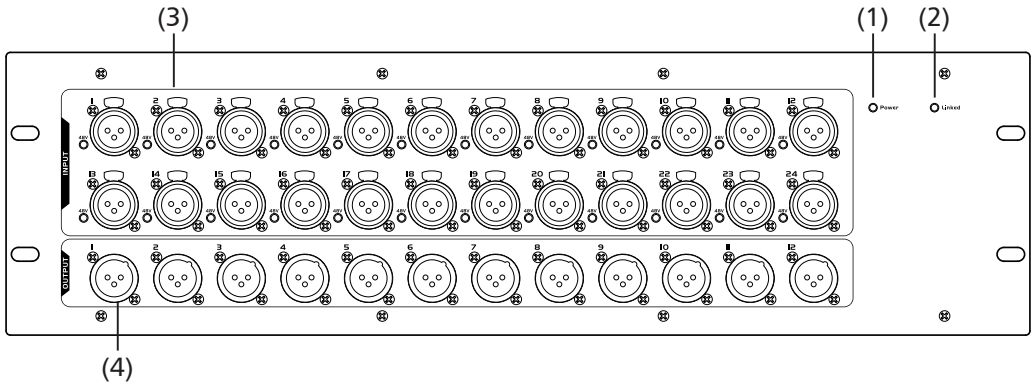
Front Panel



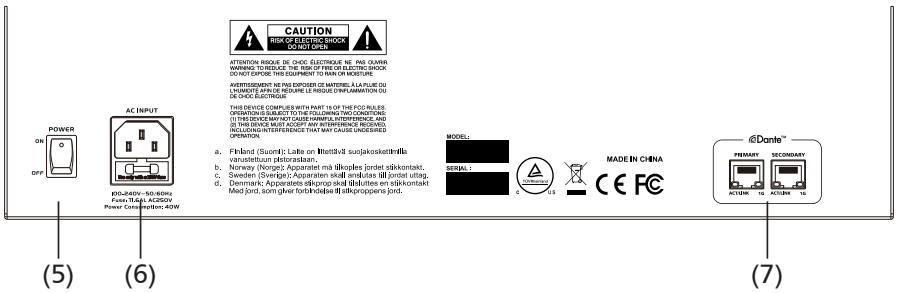
1. Power Indicator
The indicator lights up when the power is turned on.

2. Linked-status indicator
Under the Dante mode, that the LED lights up means current sampling rate is 96K.

3. MIC Input Jack
Equipped with 24 MIC input channels.

4. Analog output channel
XLR jack used to output analog signals.

REAR PANEL



5. Power Switch

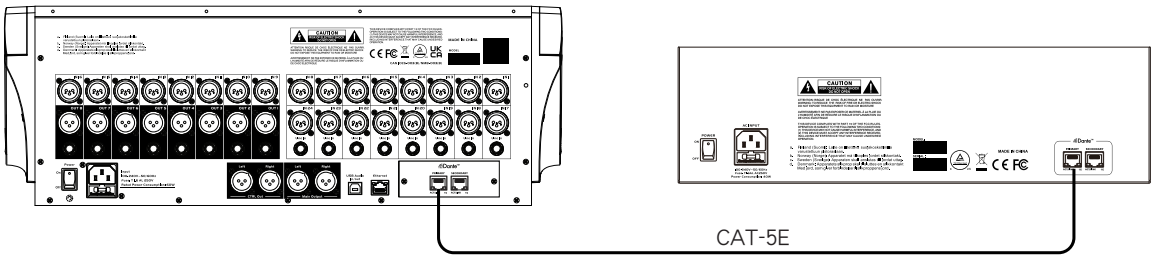
6. AC input
It used forAC input.
Note: 100-240V-50/60Hz. Fuse: T1.6AL AC250V. Power consumption: 40W.

7. DANTE port
Two DANTE ports labeled "primary" and "secondary". Only need to connect the "primary" Ethernet port not both, Or it will become a redundant fail safe. That is, in case the "primary" port loses communication, the secondary port will quickly take over. It can provide extremely high reliability in critical application by the feature of carefully network design and topology.
Two LEDs are equipped for each ethernet port. When the yellow lights for the "secondary" Ethenet port, it shows the Ethernet port can be used after your Digital Snake System is powered. The green on the Ethernet port will flash when there is a data transfer.

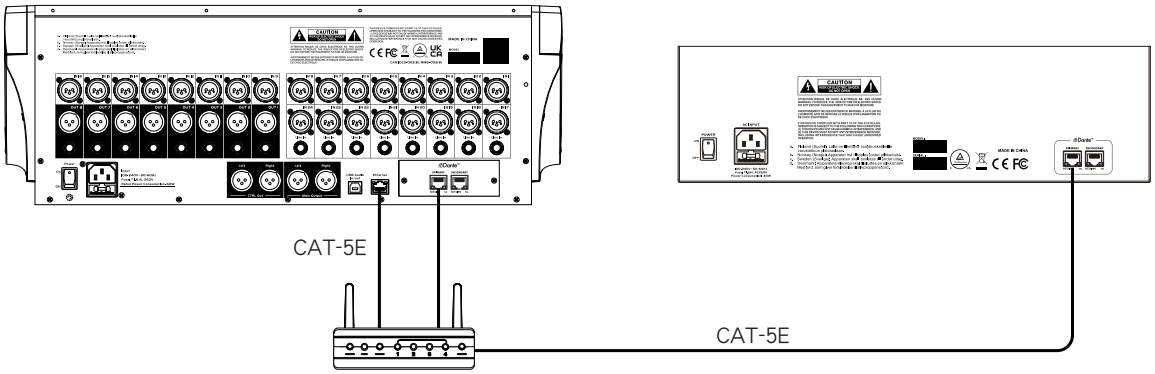
5 System Linkage Controls

About system linkage

About the setting when the digital snake system is used with DM series digital mixer together. Hookup diagram for system linkage.



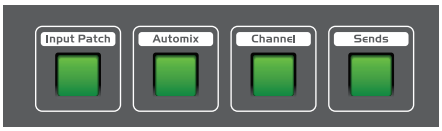
Indirect wiring diagram via router/switcher.

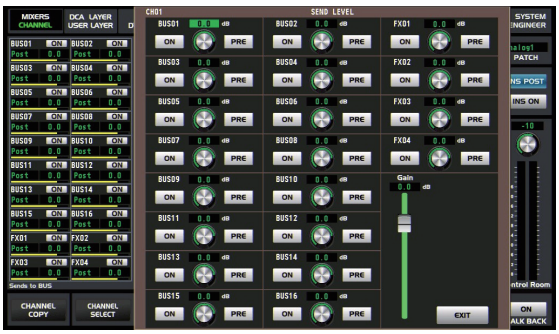


Setting steps based on the digital audio expander as receiver.

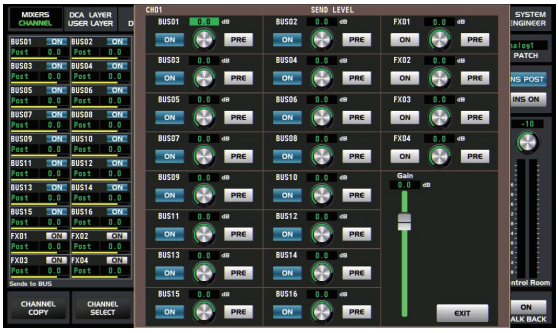
1. Select the channel to send DANTE signal source for the digital mixer.

1.1. Press down the "sends" button on the front panel and then the Bus assignment page shown on LCD screen.



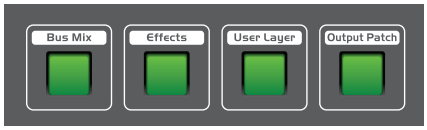


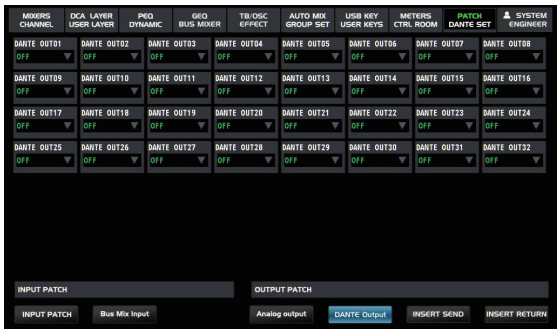
1.2. Touch the "ON" switch shown on this interface to assign the channel signals into the Bus.

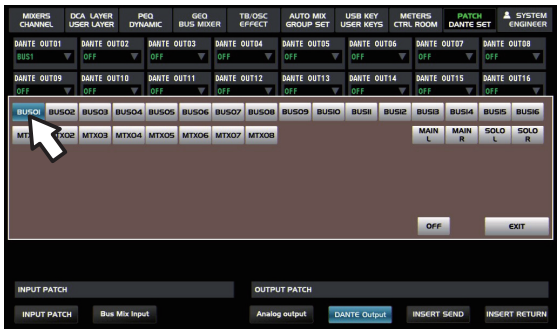


System Linkage Controls

1.3. Press the "Output Patch" button on the front panel to enter below interface. Then touch "DANTE Output" box on LCD screen and then select related "DANTE OUT" you want from "DANTEOUT01～32" by touching and then select related channels from pop-up menus as signal sources of DANTE output.

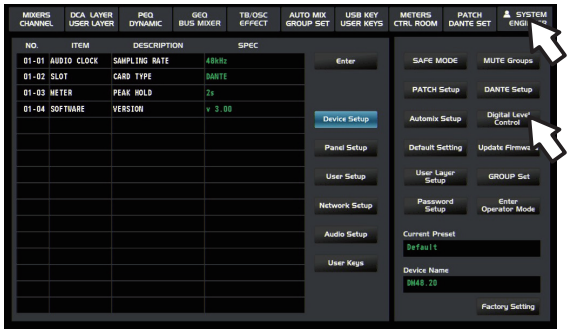


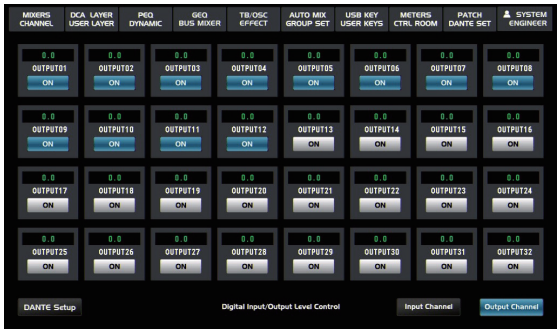




2. Setting steps when local signal sent to DANTE channel

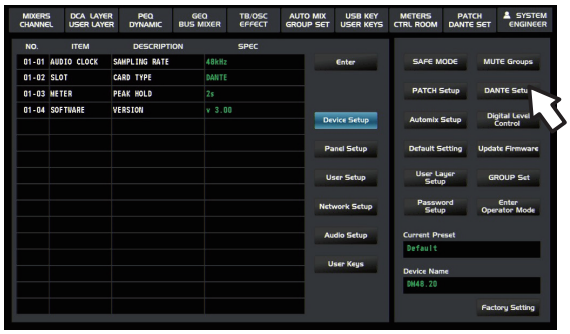
Press the "system" button on the front panel or touch the "system" icon on LCD screen to etner below interface. And then touch "digital level control" box on LCD screen to open the digital output channels by clicking "ON" icon.

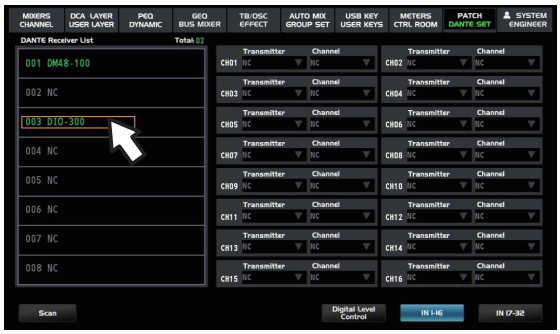




3. The assignment of DANTE routing

3.1 Press the "system "button on the front panel or touch the "system" icon on LCD screen to enter below interface. And then touch "DANTE setup " box on LCD screen to enter the interface on below right. The name & ID number of linked digital snake system will be displayed on "DANTE receiver list".

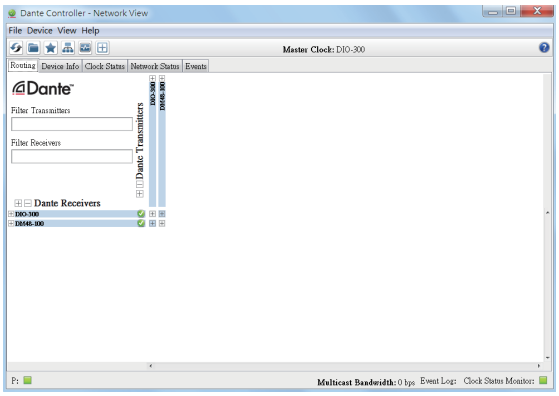




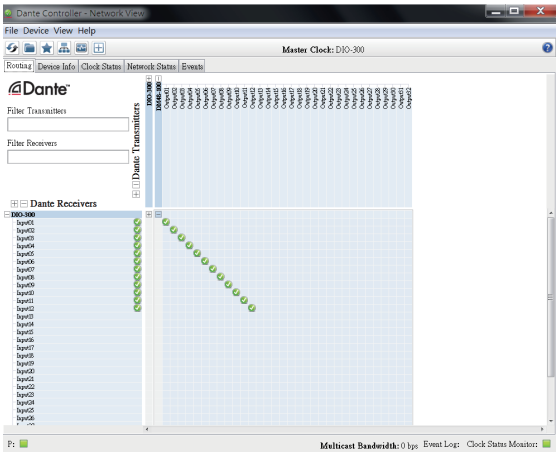
5 System Linkage Controls

3.2. Selecting receiver and transmitter from the list
Select "DIO-300" shown on "DANTE receiver list" as receiver and the touch any transmitter channel on the right to select DM48-100 as transmiter from pop-up submenu.

3.3. Connect the DANTE card to your PC, Then open the "DANTE Controller" software installed in your PC and click "fresh" button to recognize related devices and then enter below interface. Also it is available to proceed MATRIX setting for DANTE card.

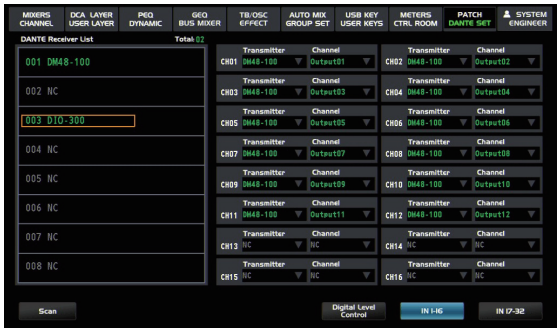


3.4 The MATRIX system divided into two parts (receiver and transmitter)
Select "DIO-300" shown on "DANTE receiver list" as receiver and the touch any transmitter channel on the right to select DM48-100 as transmiter from pop-up submenu. then click related channels for further setting.



System Linkage Controls

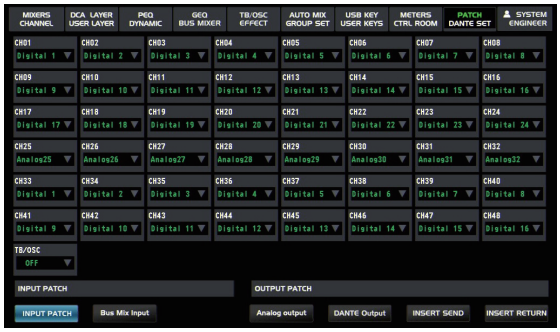
3.5. It is available to proceed audio transmission after all above settings completed.



Setting steps based on the digital mixer as receiver

1.Select the channel to send DANTE signal source for your digital expander.

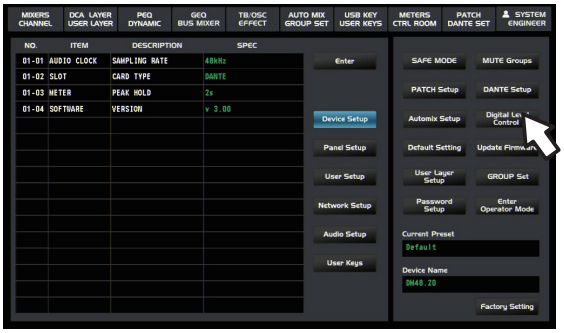
1.1 Press down the "input patch" button on the front panel to enter below interface. Then switch a certain number of analog channels into digital channels based on the number of connected expander by following below diagram. For example: 24 channels will be selected as digital signal sources when one expander connected.

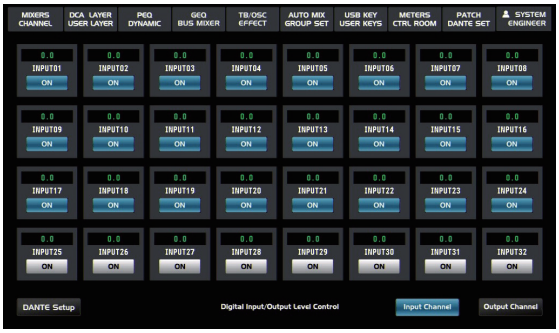


5 System Linkage Controls

2. Setting steps based on the digital mixer receiving DANTE signal

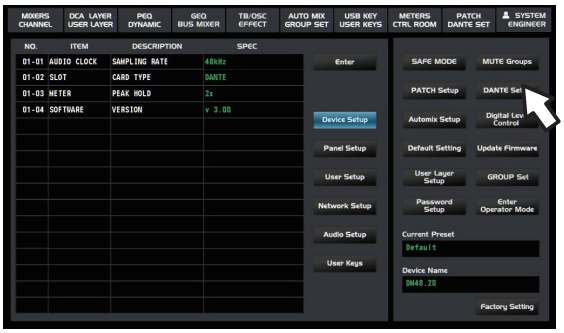
Press the "system" button on the front panel or touch the "system" icon on LCD screen and then select "digital level control" from the drop-down menu to open the digital input channels by clicking "ON" icon.

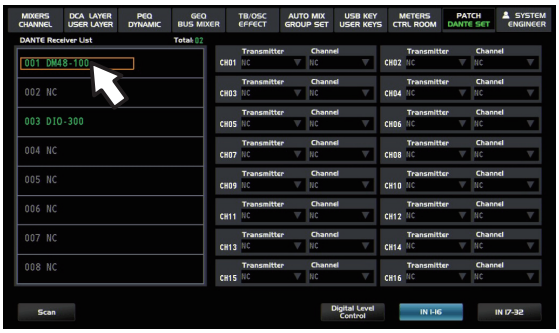




3. DANTE Routing assignment

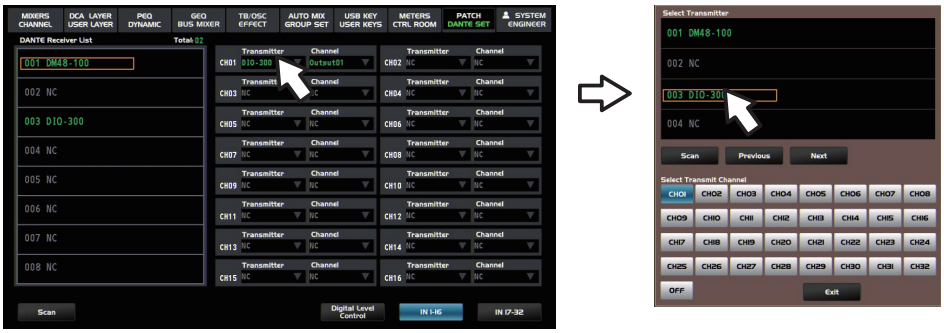
3.1 Press the "system" button on the front panel or touch the "system" icon on LCD screen to enter below iterface. and then touch "DANTE setup " to enter "DANTE assignment " page. The name & ID number of linked digital expander will be displayed on "DANTE receiver list".





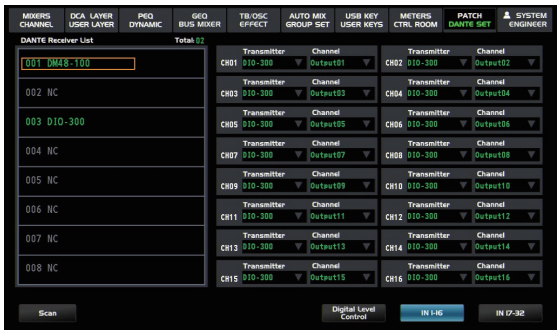
3.2 Receiver and Transmitter selection

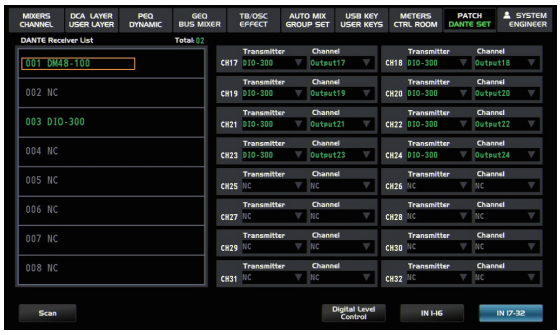
Select "DM48-100" shown on "DANTE receiver list" as receiver and the touch any transmitter channel on the right to select DIO-300 as transmiter from pop-up submenu. then click related channels for further setting.



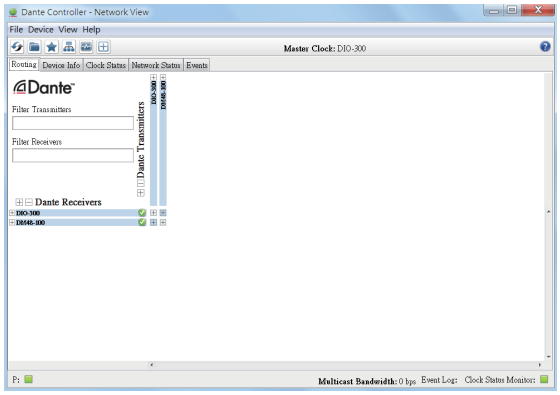
System Linkage Controls

3.3. It is available to transmit audio signals after all above setting steps completed. At this time the digital signals received can be assigned into the Bus or main outputs.

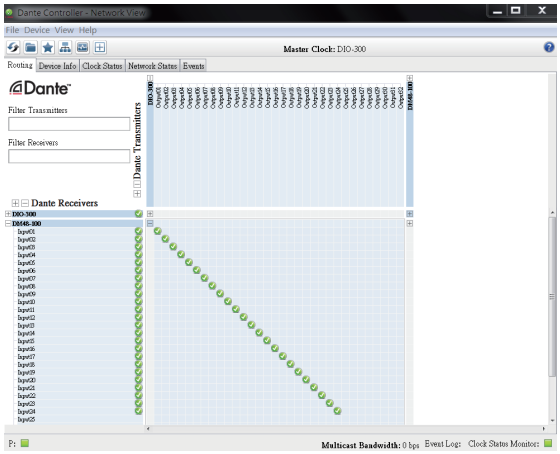




3.4. Connect the DANTE card with PC, open the "DANTE Controller" software installed in PC and click "fresh"button to recognize related devices and then enter below interface. Also it is available to proceed MATRIX setting for DANTE card.

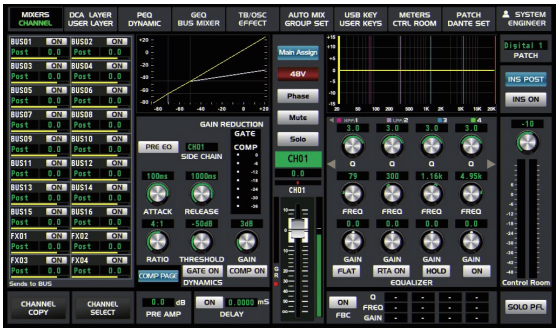


3.5 The MATRIX divided into two parts (receiver and transmitter)
Select "DM48-100" shown on "DANTE receiver list" as receiver and the touch any transmitter channel on the right to select DIO-300 as transmiter from pop-up submenu. then click related channels for further setting.



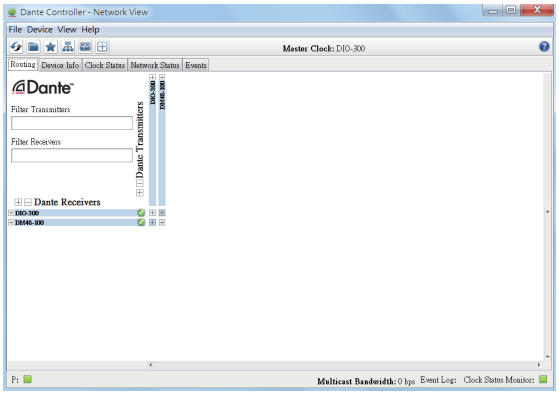
5 System Linkage Controls

3.6 Since related channel has been selected to input signal sources from digital mixer. That adjust gain value of digital snake system or power on/off 48V phantom power can be operated on channel page after corresponding channels selected.



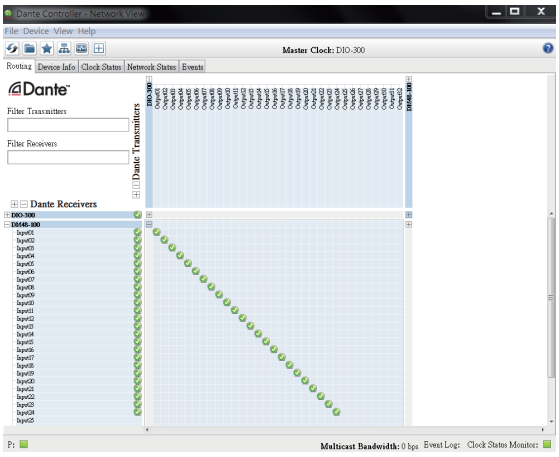
Linkage setting steps based on 2 digital snake systems (DIO24) connected

1. Arrange configuration according to the linkage diagram(1) on page18.
2. Connect the DANTE card with PC, open the "DANTE Controller" software installed in PC and click "fresh" button to recognize related devices and then enter below interface. Then proceed the MATRIX settings for DANTE card.



3. The MATRIX divided into two parts (receiver and transmitter)

Select "DM48-100" shown on "DANTE receiver list" as receiver and the touch any transmitter channel on the right to select DIO-300 as transmiter from pop-up submenu. then click related channels for further setting.



PC Software Controls

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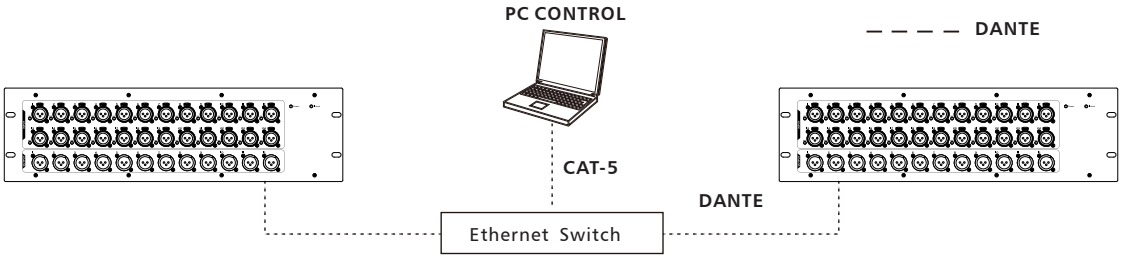
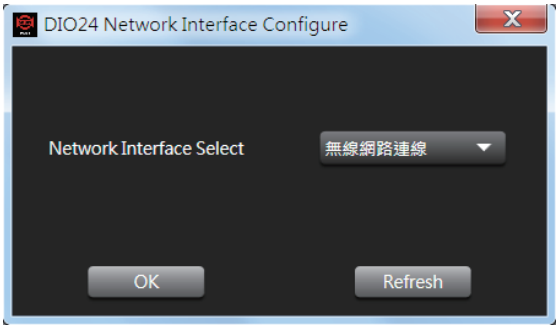
Setting Diagram



1. Open the DIO24 Control Editor

2. Select network port from below pop-up dialogue box.

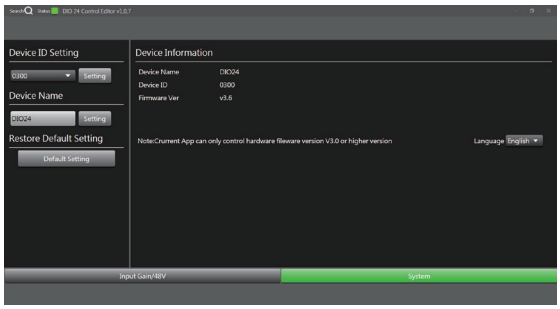


3. Click "OK" to enter software-control page as below.

4. Click the "Search" button on the left corner to search related devices. Then select the device from the list for connection.

5. Once sucessful connection, user can control the digital Gain or 48V phantom power of DIO24 under this software interface.

6. Click the "system" on the right corner to setup device name & ID or switch interface language between English and Chinese.



7 PC Firmware Updates

About DANTE

This product uses the Dante digital audio network protocol to send and receive audio signals.
The "24 in 12 out DANTE network audio" as the default configuration network audio protocol.
Dante is a protocol developed by Audinate that is designed to deliver multichannel audio signals at various sampling and bit rates, as well as device control signals over a Gigabit Ethernet network. Please visit the Audinate website: http://www.audinate.com for more details.

1. Firmware upgrade

The module firmware can be upgraded through the network. User can perform the firmware upgrade through Web interface or uploading the upgrade file with related tool. Also the software & firmware version information can be obtained via the Web interface or the Dante Controller.
Firstly try to download the DANTE Firmware Update Manager from " www.seikaku.hk " and install it.
Then process the fimware upgrade by following below steps:

1). After installation completed, please double click the DANTE Firmware Update Manager on your computer and then click the "Next" button.

2). Then click "Update Dante Firmware" button.

PC Firmware Updates

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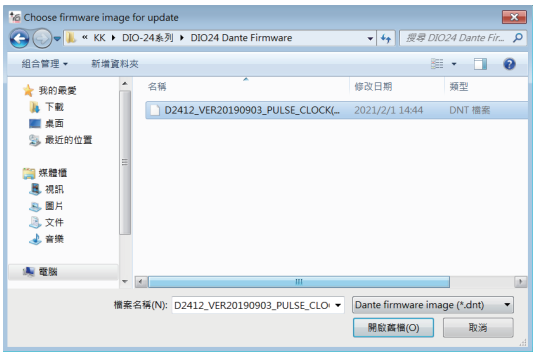
3). Click "browse" to find the update file path and select which you want, then go "Next".

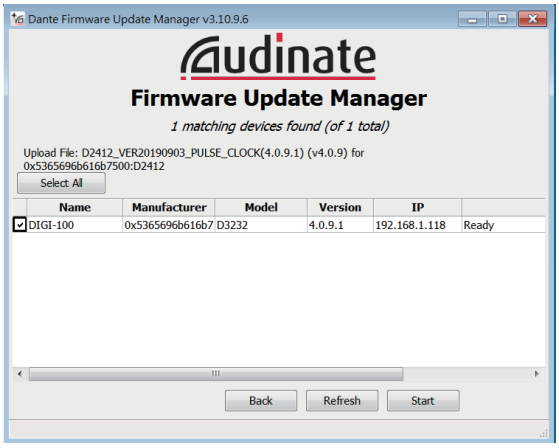


4). Click "Override Device Matching", then go "Next".

5). Select "Yes" to start searching for Dante devices.

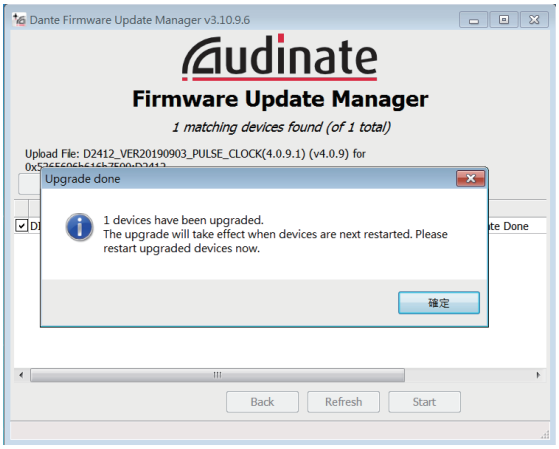
7 PC Firmware Updates

6). Select the device that needs to be updated, then click START to start the update.



7). Cick OK and wait for the update to complete.

8). Click OK, then the update is successful.



9). The unit needs to restart after fimware updating completed.

PC Firmware Updates

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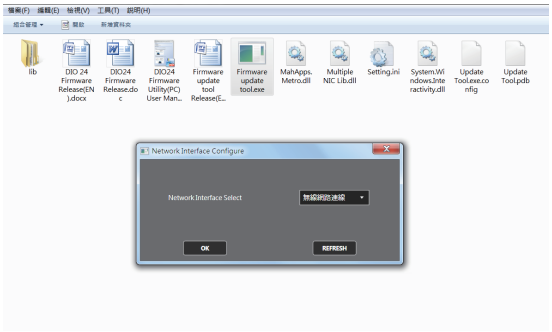
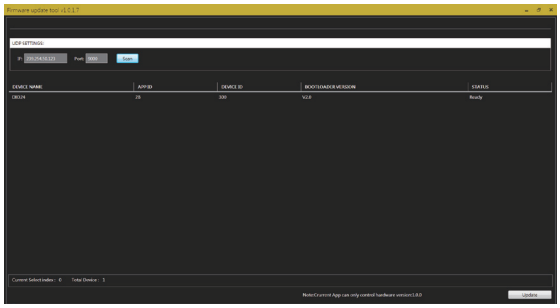
How to update DIO24's firmware

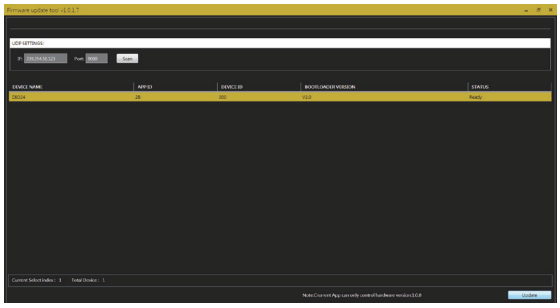
1. Open the below folder "Firmware update tool(DIO24)"



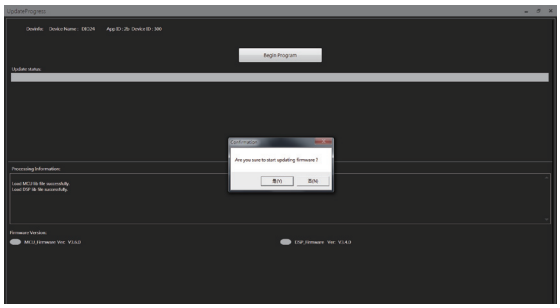
2. Search the device "DIO24"

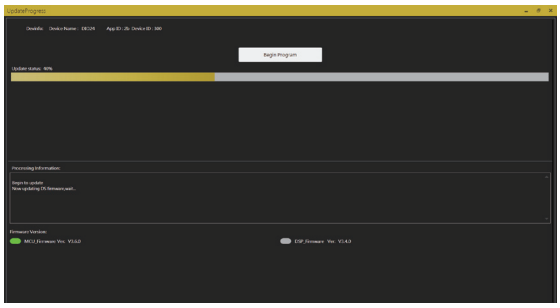


3.Select the device "DIO24".

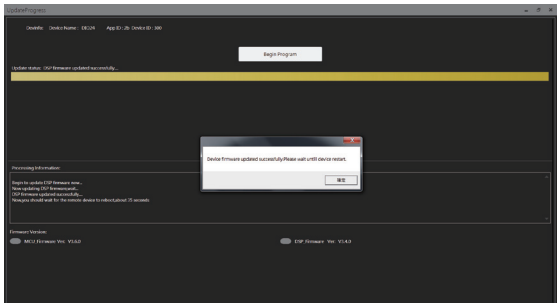


4. Click "yes" to start updating firmware.



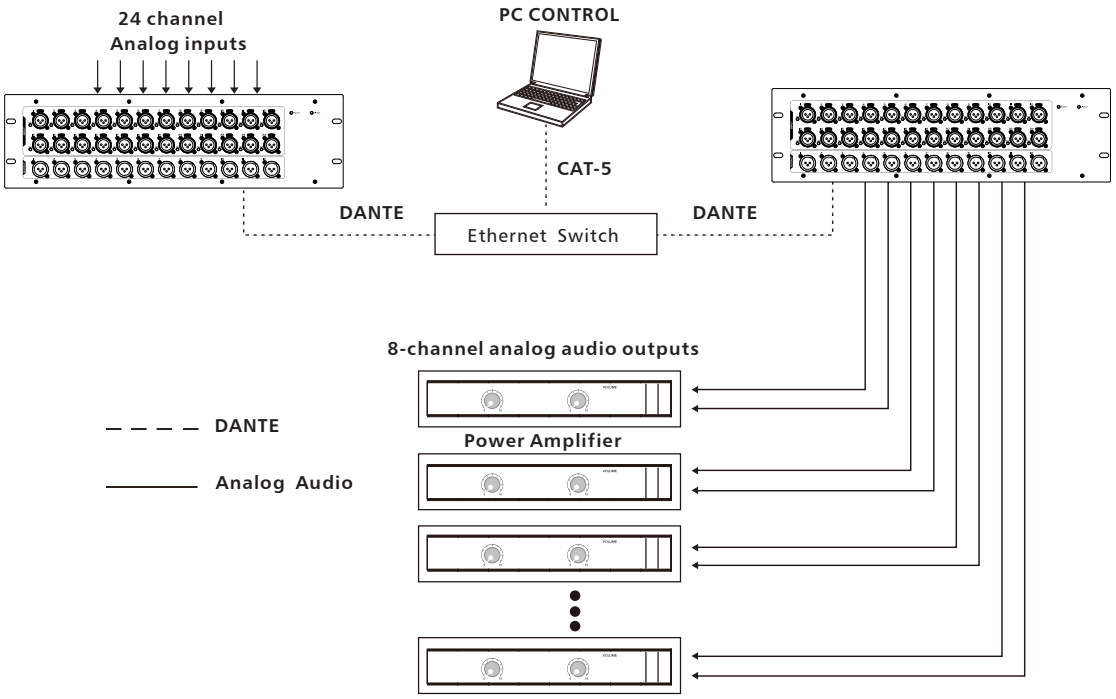


5. Pop up below tips information once firmware update completed.

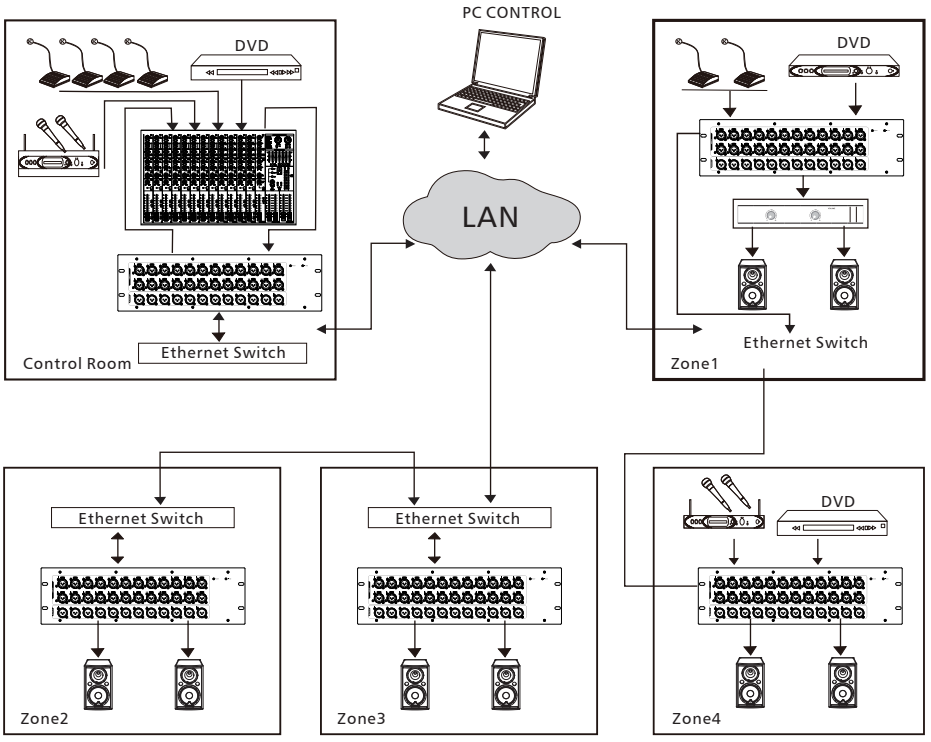


8 System Linkage Diagram

DIAGRAM(1)



DIAGRAM(2)



Block Diagram

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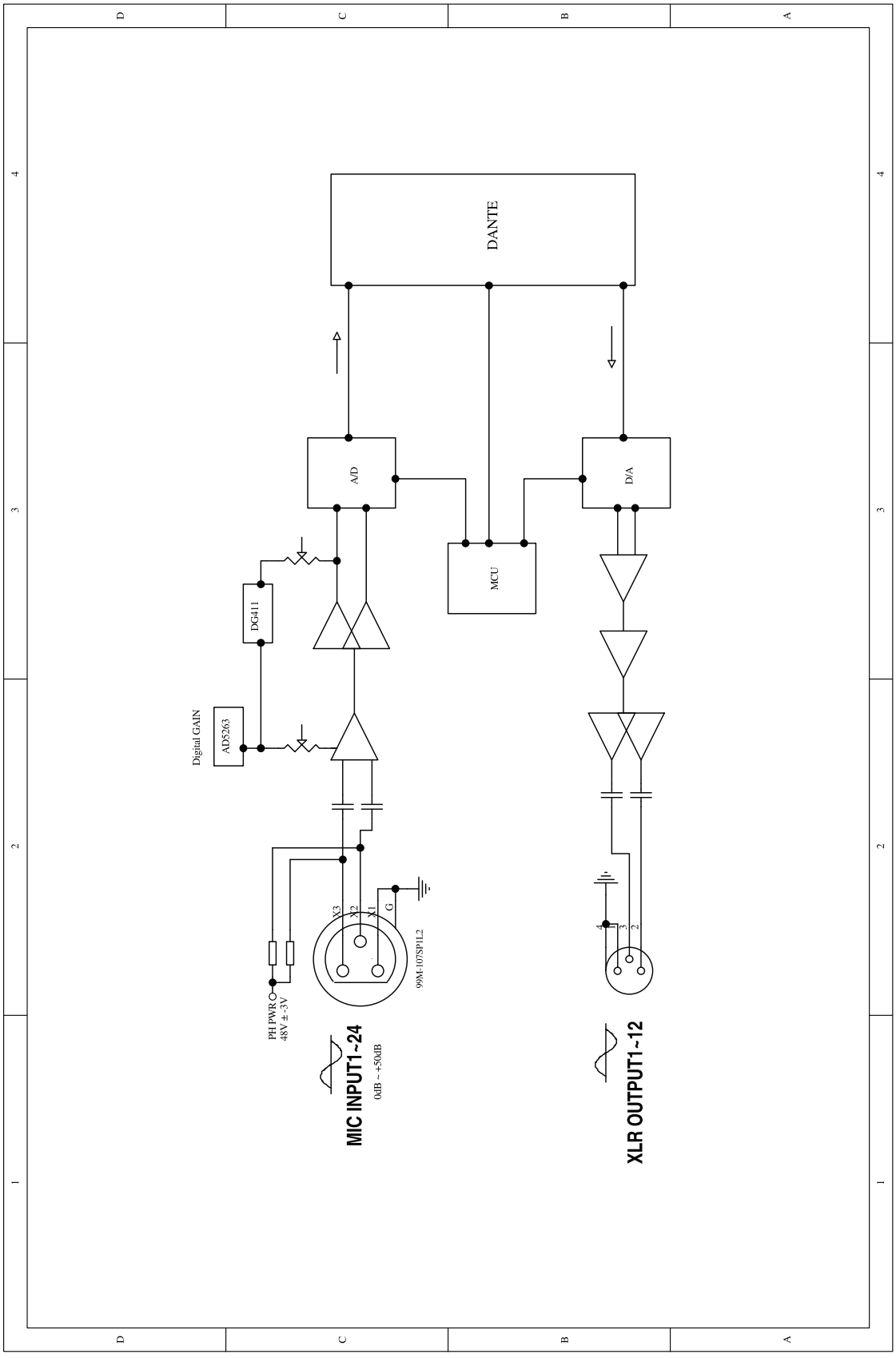

10 Technical Information

Microphone input	Electronically balanced
Frequency Response to Main Output	20Hz～20KHz at 0dBu ±1dB
Distortion(THD&N) to Main Output	<0.03% at 0dBu 1KHz
SNR(Signal to Noise Ratio)	108dB
Maximum Input Level	+20dBu
Phantom Power(+/-3V)	+48VDC
EIN(Input noise)	125dB
XLR outputs	
Maximum Output Level	+20dBu
System Crosstalk Adjacent Channels	
Input to Output(at +20dBu 1KHz)	-70dBu
Noise(Bus noise)	-91dBu
Digital Audio	
ADC Dynamic Range	114dB
DAC Dynamic Range	114dB
Internal Processor	32-bit , floating point
ADC,DAC bit depth	32bit
Impedances	
Microphone input	6.8KΩ
output	240Ω
operating free-air temperature range	0～40℃
storage temperature range	-20℃ ～60℃

Troubleshooting

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Problem	Possible Cause	Suggested Solution
Power light doesn't on after the device powered on	The power outlet or power strip is not working	Try a different outlet or power strip
	Power cord is malfunctioning	Replace the Digital Snake System power cord
Ethernet green LED doesn't work after plugging a Digital Snake System to a router	The router isn't powered on	Power on the router
	The Ethernet cable is broken	Try a different cable
	The port on the router not work	Try plugging the cable into a different port on the router
The Digital Snake System can't be controlled by the Digital Snake System discovery software	There is no Network Interface Card (NIC) used to connect to the Cobra Net network	Select the card to severe as the network adapter used in the discovery process from the network Adapter.
The green LED of Ethernet port lights on but without output.	No signal route to the transmitter	Make sure the transmitter inputs signal
	The output channel of the receiver is not assigned signal	Make sure the output channel of the receiver has assigned signal
	The transmitter's TX bundle number and receiver's Rx bundle number are different	Make sure the bundle numbers of them are the same
	The sub-count number is less than the channel number of the receiver which you are using	Set the Sub-count number no less than the channel number which you want to use
	The value of mode Rate Control for the receiver and transmitter are different	Make sure the values of mode Rate Control of the receiver and transmitter are the same