



# ANIUSB-Matrix

## Audio Network Interface

Complete user guide for the ANIUSB-MATRIX. Includes system diagrams, specifications, installation instructions, command strings, and more.

Version: 8.1 (2024-C)

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# ANIUSB-Matrix Audio Network Interface

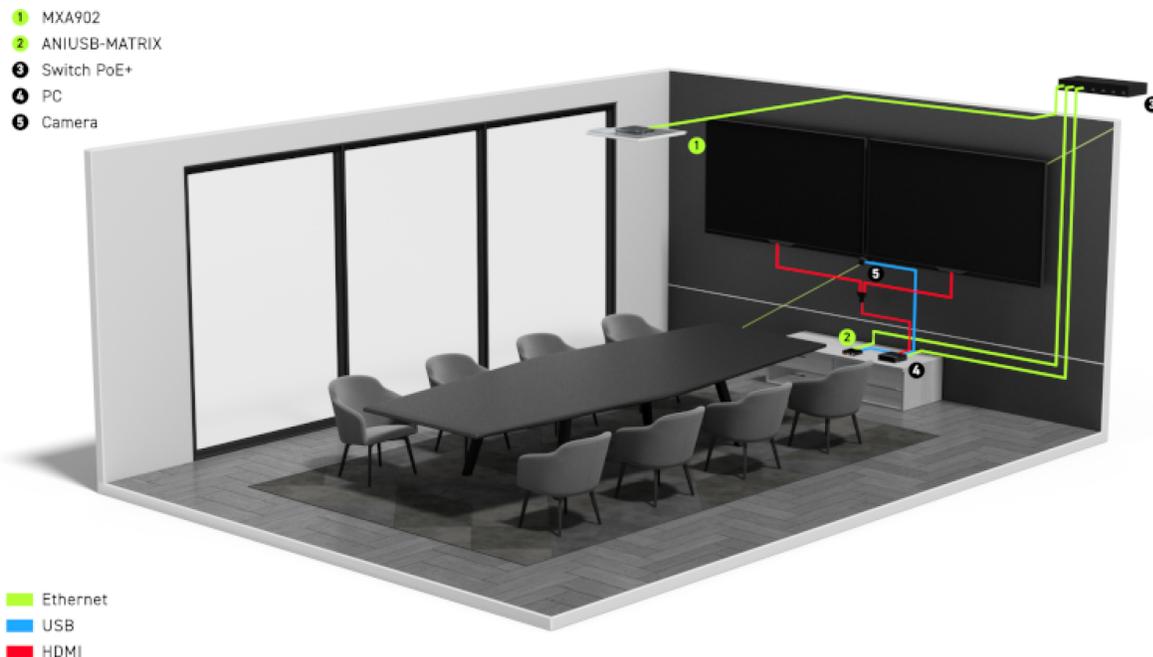
## General Description

The ANIUSB-MATRIX Audio Network Interface provides connections for USB, Dante™, and analog audio sources. Collaborate and connect with all audio devices on a single network, with support for wireless microphones, computers, mobile devices, video codecs, and loudspeaker systems. Connect with a single network cable to receive audio and power through Power over Ethernet (PoE). Use Shure Designer software to control audio and network settings from any computer connected to the same network.

## Getting Started

### Videoconferencing Room Equipment

Your ANIUSB-MATRIX is one part of a complete room system for videoconferencing. It's helpful to think about all the parts of your room system as you get started setting up the ANIUSB-MATRIX.



Medium room equipment example

A standard room includes some or all of this equipment:

- Microphone(s)
- DSP or other processor
- Loudspeakers (networked or analog)

- Computer with videoconferencing software
- Network switch
- Camera
- Other accessories such as table mute buttons, tablets to control meetings, and other peripherals

The [Microflex® Ecosystem](#) offers a complete portfolio of networked audio solutions that can be precisely tailored to your needs.

## What Software Do I Need to Set Up the ANIUSB-MATRIX?

Install this software on a computer that connects to the same network as the ANIUSB-MATRIX:

- **Control software** to adjust ANIUSB-MATRIX settings. This device has 2 options:

### Option 1: [Shure Designer](#)

- Use for managing lots of Shure devices in 1 place
- Control Shure devices and route audio between them
- Create rooms to manage devices and design coverage

### Option 2: Web application (open using [Shure Web Device Discovery](#))

- Use to manage each Shure device separately
- Control each device individually with its web application
- Route audio using [Dante Controller](#)
- **Dante Controller** to send audio signals to other Dante devices. Not necessary if you're only routing audio to Shure devices in Designer.
- **Shure Web Device Discovery** to easily find device web applications. Not necessary if you're only using Designer.
- **Shure Update Utility** to update firmware on Shure devices (download at [shure.com/suu](http://shure.com/suu))

## ANIUSB-MATRIX Designer Setup Example

This example uses Shure Designer 6.0 software to set up an ANIUSB-MATRIX and an MXA902. You can use a different microphone with the ANIUSB-MATRIX, but the setup process in Designer is similar.

After completing this basic setup process, you should be able to:

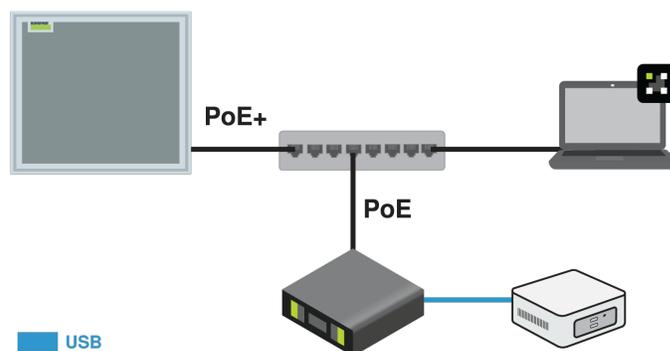
- Access the ANIUSB-MATRIX in Designer
- Adjust settings and route audio
- Understand the basic workflow for working with devices in Designer

### This example uses:

- Cat5e or better Ethernet cable (shielded cable recommended)
- [Network switch](#) that provides Power over Ethernet Plus (PoE+)
- Shure Designer software (download at [shure.com/designer](http://shure.com/designer))
- MXA902
- Computer with videoconferencing software

For best results, route 1 microphone to the ANIUSB-MATRIX. If using multiple microphones in a space, use a device with an automixer (such as a [P300](#) or [IntelliMix® Room](#)).

## Step 1: Install and Connect



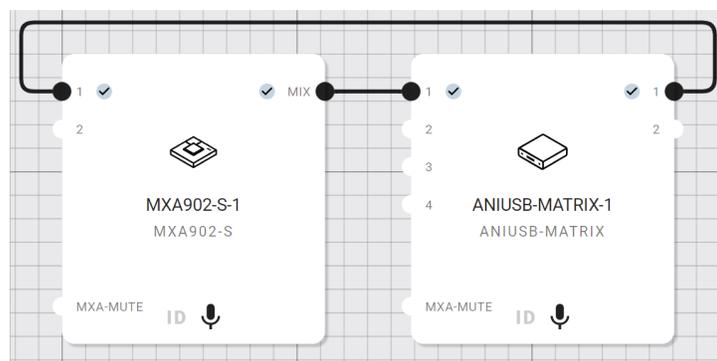
1. Install the ANIUSB-MATRIX and other devices. Connect the MXA902 to a PoE+ port on the network switch using Ethernet cable. If your switch doesn't supply PoE+, the loudspeaker does not play sound and the error LED flashes. The ANIUSB-MATRIX only requires PoE.
2. Connect a computer with videoconferencing software (such as Zoom or Microsoft Teams) installed on it to the ANIUSB-MATRIX's USB port.
3. Connect the computer running Designer to the same network.
4. Open Designer. Check that you're connected to the correct network in File > Designer preferences.
5. Open a new design and drag both devices into the design.

## Step 2: Route Audio and Apply DSP

The easiest way to route audio and apply DSP is with Designer's auto route workflow. This feature routes audio signals, applies DSP settings, turns on mute synchronization, and enables LED control for connected devices.

1. Select Auto route. Designer makes the following routes:
  - MXA902 to ANIUSB-MATRIX
  - ANIUSB-MATRIX USB output to computer with videoconferencing software
  - ANIUSB-MATRIX Dante output to MXA902 Dante input (loudspeaker)

You can also route audio manually in Designer or use Dante Controller.

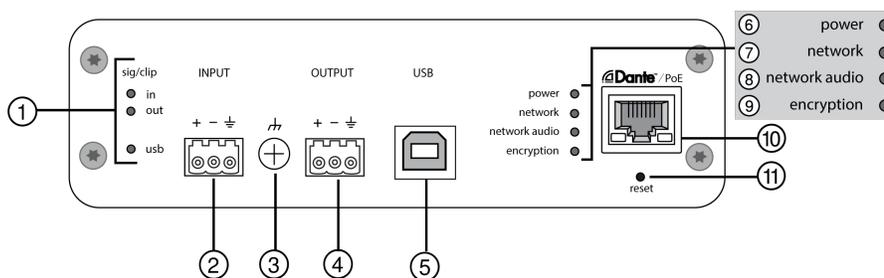


2. Check the audio routes, matrix mixer routes, and other settings to make sure they fit your needs. To adjust matrix mixer routes, go to [Your room] > ANIUSB-MATRIX > Matrix mixer.
3. Select Deploy and connect to send the settings to the installed devices. Designer walks you through associating the design devices with the online devices.

## Step 3: Listen and Adjust

1. Open the videoconferencing software on the computer connected to the ANIUSB-MATRIX. In the settings, choose the ANIUSB-MATRIX as the speaker and microphone.
2. Place a test call with the whole system. Have the far-end caller tell you how the microphone signal sounds and make adjustments as needed:
  - Microphone: [Your room] > MXA902 > IntelliMix
  - Loudspeaker: [Your room] > MXA902 > Loudspeaker > Speaker output.
  - ANIUSB-MATRIX: [Your room] > ANIUSB-MATRIX
3. If needed, move the microphone's coverage area: [Your room] > Coverage. You can also listen to the microphone signal directly [using a Dante headphone amp](#) to help make adjustments.

## ANIUSB-MATRIX Parts



The LEDs on the front of the ANIUSB-MATRIX behave the same as the ones on the back of the device.

### 1. Sig/clip level indicators

Tri-color LEDs indicate the audio signal level for the analog channels and connectivity status for the USB channel. Adjust output levels in Shure Designer software to avoid clipping.

#### Sig/Clip In and Out LED Behavior

LED State	Audio Signal Level
Off	Less than -60 dBFS
Green	-59 dBFS to -24 dBFS
Yellow	-23 dBFS to -1 dBFS
Red	0 dBFS or more

**Note:** The input and output LEDs are off when metering is set to post-gain.

#### USB Audio LED Behavior

LED State	Meaning
Off	No USB device connected
Green	USB device operating successfully

LED State	Meaning
<b>Red (flashing)</b>	Problem detected with connected USB audio device

2. Audio input (block connector)

Block pin assignments:

- + : Audio +
- - : Audio -
- Ground symbol: Audio ground

3. Chassis ground screw

Provides an optional connection for microphone shield wire to chassis ground.

4. Audio output (block connector)

Balanced audio output connects to an analog device. Set the output level in Shure Designer software to match the input sensitivity of the analog device.

*Note:* See front panel labels for block connector assignments.

5. USB port

Connects to a computer to send and receive any combination of input and output audio channels.

6. Power LED

On when device has PoE

7. Network LED

On when network connection is active

8. Network audio LED

Network Audio LED Behavior

LED State	Meaning
<b>Off</b>	No active signal.
<b>Green</b>	Device is operating successfully.
<b>Red</b>	Error has occurred. Refer to event log in web application for details.

9. Encryption LED

Encryption LED Behavior

LED State	Meaning
<b>Off</b>	Audio is not encrypted
<b>Green</b>	Successful encrypted audio connection with another device
<b>Red</b>	Encryption error. Possible causes: Encryption is enabled on one device and not on another Encryption passphrase mismatch

10. RJ-45 network port
11. Reset button
  - **Network reset** (press button for 4-8 seconds): Resets all Shure control and audio network IP settings to factory defaults
  - **Full factory reset** (press button for longer than 8 seconds): Restores all network and Designer settings to the factory defaults

## Power Over Ethernet (PoE)

This device requires PoE to operate. It is compatible with both **Class 0** and **Class 3** PoE sources.

Power over Ethernet is delivered in one of the following ways:

- A network switch that provides PoE
- A PoE injector device

## What's in the Box

<b>KIT, HARDWARE, ANIUSB-MATRIX</b>	90A33522
<b>Mounting Bracket (1/3 rack unit)</b>	53A27742

**Note:** USB cable not included.

## Control Devices with Shure Designer Software

To control this device's settings, use Shure Designer software. Designer enables integrators and system planners to design audio coverage for installations using MXA microphones and other Shure networked devices.

### To access your device in Designer:

1. Download and install Designer on a computer connected to the same network as your device.
2. Open Designer, and check that you're connected to the correct network in File > Designer preferences.
3. Click Online devices. A list of online devices appears.
4. To identify devices, select a device and click ID in the Properties menu. Double-click the device to open the settings.

From here, you can add devices to designs or online rooms and route audio to other Shure devices. Learn more at [shure.com/designer](https://shure.com/designer).

You can also access device settings using [Shure Web Device Discovery](#).

## Use Designer's Auto Route

Designer's auto route speeds up the process of connecting systems with 1 audio processor and at least 1 microphone. Auto route also creates mute control routes in rooms with MXA network mute buttons. When you select Auto route, you can direct Designer to:

- Create audio routes and mute control routes
- Adjust audio settings
- Turn on mute synchronization
- Enable LED logic control for applicable devices

The settings are optimized for your particular combination of devices. You can adjust settings further, but auto route gives you a good starting point. Auto route works with any device in Designer.

**To use auto route:**

1. Place all relevant devices in a design.
2. Select Auto route. Designer optimizes microphone and DSP settings for your equipment combination.

If you remove or add devices, select Auto route again.

**Note:** The auto route process clears any manual routes you may have made in your design.

After auto routing a room, check and adjust settings to fit your needs. You may need to:

- Delete unnecessary routes.
- Check levels and adjust gain.
- Check that AEC reference signals are correctly routed and received in a test call.
- Fine-tune DSP blocks.
- Adjust your processor's matrix mixer routes.

If you want to auto route an online room, turn on online room editing in **File > Designer preferences**.

**Note:** Changes to an online room may cause audio to briefly drop out.

Refer to Designer's [Troubleshooting section](#) for help with routing.

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## Installation and Rack Mounting

Two mounting solutions are available for installing the Audio Network Interface:

**CRT1 19" Rack Tray (optional accessory):** Supports up to 3 devices; mountable in a rack or under a table

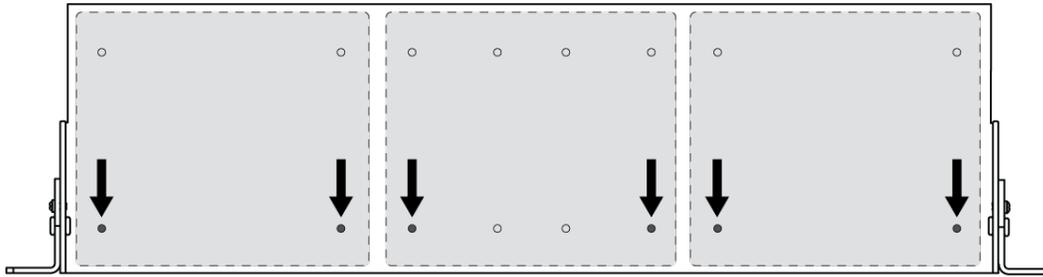
**Single-unit Mounting Tray (included accessory):** Supports a single device for mounting under a table

## Securing the Devices

Use the included screws from the mounting hardware kit to secure the Audio Network Interfaces. Audio Network Interfaces can be mounted to face either direction. Insert the screws from the bottom in the appropriate holes, according to the following diagrams:



*Align the holes as shown for securing a single device in the single-unit mounting tray*



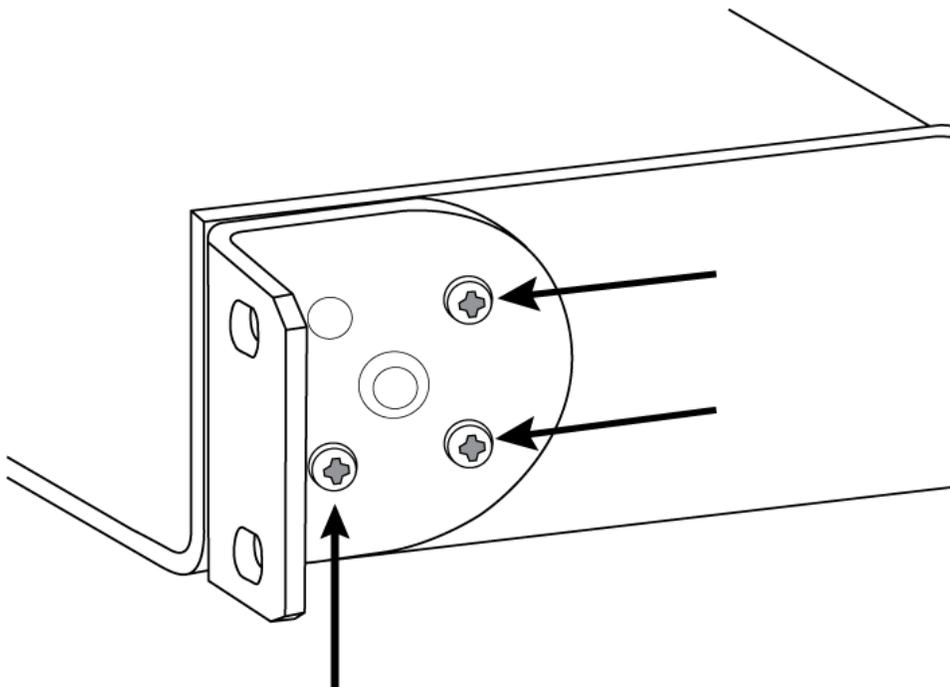
*Align the holes as shown for securing up to 3 devices in the 19" rack tray.*

## Rack Ear Configuration

A combination of up to 3 Audio Network Interfaces can be mounted in a single 19-inch rack space. The adjustable rack ears support mounting in a standard equipment rack or underneath a table.

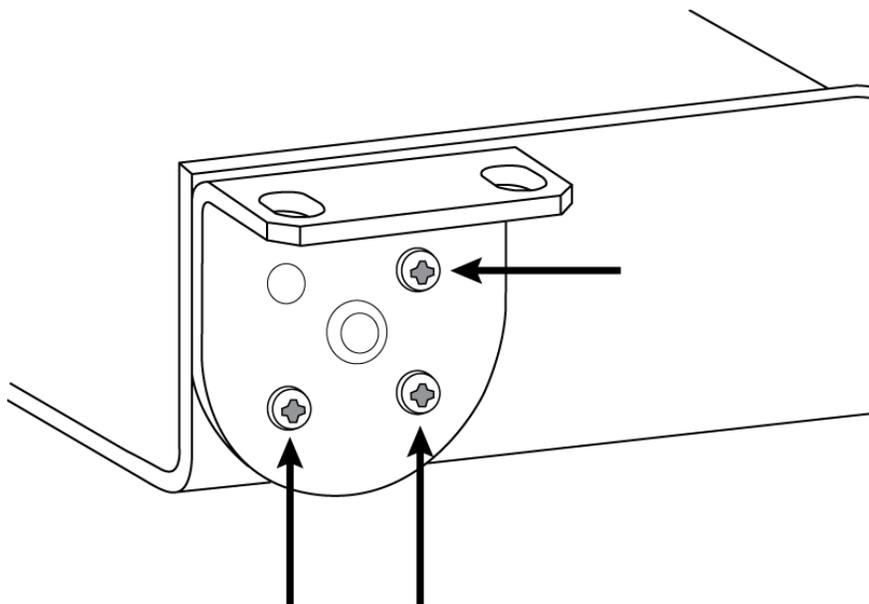
### Standard 19" Rack Mount

1. Align the ears with the mounting holes pointed forward.
2. Install the 3 screws that hold the ear to the tray as shown.



### Under-Table Mounting

1. Align the ears with the mounting holes pointed upward.
2. Install the 3 screws that hold the ear to the tray as shown.



## Installing Underneath a Table

1. Hold the tray in the desired location under a table.
2. Use a pencil to mark the location of the mounting holes on the table.
3. Drill 4 holes for the screws. The diameter of the holes in the tray are 7.1 mm.
4. Install the components into the tray.
5. Install with 4 screws to secure the tray underneath the table.

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## Connections and Signal Flow

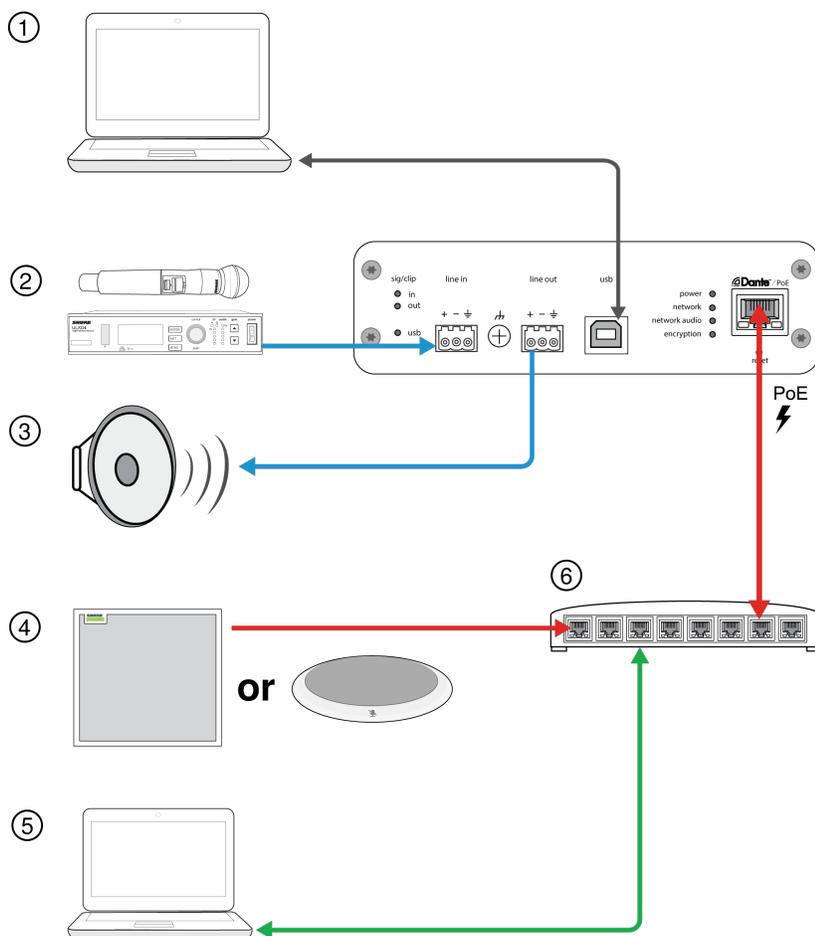
The ANIUSB-MATRIX has 4 Dante inputs and 2 Dante outputs. You can route any input to any output and adjust crosspoint gain using the matrix mixer.

The ANIUSB-MATRIX has 2 Dante transmit flows. [Learn more about Dante flows.](#)

## Best Practices

- For best results, route 1 microphone to the ANIUSB-MATRIX. If using multiple microphones in a space, use a device with an automixer (such as a [P300](#) or [IntelliMix Room](#)).
- Use Shure Designer's [auto route workflow](#) to quickly set up Dante audio routes, mute control routes, matrix mixer routes, and other settings.

These are some of the devices that you can connect to the ANIUSB-MATRIX:



## 1. Computer with videoconferencing software

The computer sends and receives audio to and from the videoconferencing software. All signals pass through the ANIUSB-MATRIX's USB connection. Route Dante sources using Shure Designer or Dante Controller software.

*Note: Compatible with Mac and PC*

## 2. Analog input sources

Analog sources (such as wireless microphones or any line-level devices) connect to the analog line input.

## 3. Analog output devices

Loudspeakers, amplifiers, or recording devices connect to the analog line output.

## 4. Dante-enabled microphone

A Dante microphone (such as a Shure Microflex Advance array) connects to the network switch. Route the microphone's signal to the ANIUSB-MATRIX, and then use the matrix mixer to route the signal to the USB output.

## 5. Control computer

A computer connected to the network accesses Shure Designer to control the channel levels and processing.

## 6. Network switch

The network switch provides Power over Ethernet (PoE) to devices that require it.

## Connecting the ANIUSB-MATRIX to a Computer

Connect the ANIUSB-MATRIX to a computer with conferencing software using the USB port.

When the ANIUSB-MATRIX is connected for the first time, the computer recognizes it as a USB audio device. You may need to select it as the input/output (recording/playback) device to pass audio. Assign the ANIUSB-MATRIX as the default device to ensure it passes audio every time it is plugged in. Refer to the manual for your computer to configure the audio settings.

## Routing Audio Channels to the USB Port

You can route audio to and from the ANIUSB using Dante Controller or Shure Designer software. Use the ANIUSB's matrix mixer to route Dante and analog channels to the USB port.

### Step 1: Dante Controller or Shure Designer

1. Open Dante Controller or Shure Designer and route Dante devices (such as MXA or MXW microphones) to the ANIUSB's Dante input channels. Name the channels to keep track of devices.
2. If you need to send channels from the ANIUSB to other Dante-enabled devices (such as an amplifier, loudspeaker, or recording device), route the ANIUSB's Dante output channels to the appropriate devices in Dante Controller.

*Note: Shure Designer creates Dante audio routes between Shure devices. To create Dante audio routes with non-Shure Dante devices, use Dante Controller.*

### Step 2: Matrix mixer

1. Open the ANIUSB's matrix mixer to route Dante and analog channels to the USB port.
2. Assign the USB Input channel (far-end audio) to the appropriate outputs. If recording a meeting, be sure to route the near-end microphones and the USB input to the recording device.

## Adapter Compatibility

This device is compatible with USB-B to USB-C adapters. Using an adapter is only recommended for desktop and laptop computers, as many mobile devices do not support bi-directional audio through USB or lightning ports.

## USB Device Type Settings

When you use a USB-connected codec with a P300 or ANIUSB-MATRIX, you may need to set the USB device type on the Shure device.

The USB device type setting tells the codec if acoustic echo cancellation (AEC) is needed or not. The codec can then turn on or turn off its own AEC (if supported).

**For example:** You have an MXA710 routed to an ANIUSB-MATRIX and want to use the MXA710's AEC. Set the USB device type to Echo-canceling speakerphone to tell the codec to turn off its AEC.

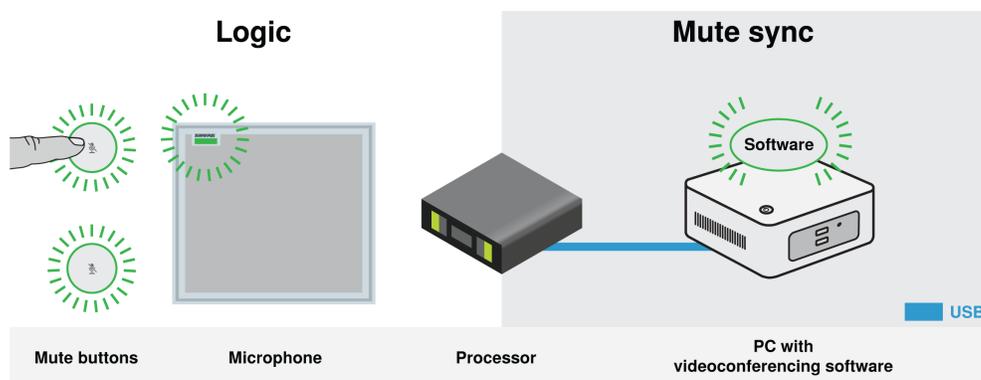
### To change USB device type:

1. In Designer, find the P300 or ANIUSB-MATRIX and go to Settings > General.
2. Choose a USB device type:
  - Speakerphone: For using the codec's AEC
  - Echo-canceling speakerphone: For using the Shure device's AEC
3. After changing the USB device type, select your device as the default audio device in the codec's settings.
4. Place a test call to make sure AEC is working properly.

# Mute Sync

It's important to be able to see if a room is muted or unmuted during a call. You want devices to show the same mute status as the videoconferencing software. Shure devices use logic and mute sync to make this happen.

- **Logic:** Aligns mute status across Shure devices in the room. The processor (such as a P300, IntelliMix Room software, or an ANIUSB-MATRIX) is the controller.
- **Mute sync:** Aligns mute between the processor and the videoconferencing software, which is on a computer connected to the processor by USB. The processor's automix output is muted or unmuted to change the mute status of the system.



When mute sync is working correctly, you can mute a device (mute button or microphone mute button) or the videoconferencing software to mute the room.

## To use mute sync:

1. In Designer, create audio and mute control routes between devices in the room.
2. Connect a computer with videoconferencing software to the processor's USB port.
3. Turn on mute sync and logic:
  - Processors: [Your device] > Settings > Mute control
  - Microphones without physical mute button: Logic is always on
  - MXA310 and MXA mute button: Settings > Logic control > Mute control function > Logic out

Designer's auto route process configures all necessary mute sync and logic settings for you.

## Compatible Shure Logic Devices

- P300 (Also mutes [supported soft codecs](#) connected by USB)
- ANIUSB-MATRIX (Also mutes [supported soft codecs](#) connected by USB)
- IntelliMix Room software (Also mutes [supported soft codecs](#) connected by USB)
- MXA901
- MXA902
- MXA910
- MXA920
- MXA710
- MXA310
- Network Mute Button
- ANI22-BLOCK
- ANI4IN-BLOCK
- Logic-enabled MX microphones connected to ANI22-BLOCK or ANI4IN-BLOCK
  - MX392

- MX395-LED
- MX396
- MX405/410/415

For help with specific mute sync implementations, [see our FAQs](#).

## Audio Settings

### Schematic View

The schematic view in Designer provides an overview of the entire audio signal chain, with the ability to adjust settings and monitor signals.

### Adjusting Settings

Right-click an input, output, or processing block to access the following options:

#### Channel Settings

Setting	Function
<b>Copy / paste</b>	Copy and paste settings between items. For example, set the equalizer curve on the USB output, and then use the same setting for the analog output. Or, copy the gain and mute status from one input channel to several others.
<b>Mute / unmute</b>	Mutes or activates the channel
<b>Enable / disable</b>	Turns processing on or off (does not apply to matrix mixer or automixer)
<b>Edit</b>	Opens the dialog to adjust parameters. You can also double-click a block to edit it.

Right-click in a blank area to access global settings:

- Mute/unmute all input channels
- Mute/unmute all output channels
- Close all open dialogs

### Customizing the Workspace

Create a custom environment to monitor and control a set of inputs, outputs, and processing blocks from a single screen.

There are 2 ways to break out dialogs:

- Right-click > Edit
- Double-click the input, output, or processing block.

Open as many dialogs as you need to keep important controls available.

### Metering and DSP Blocks

A meter appears underneath each input and output to indicate signal levels (dBFS).

DSP blocks have a color when they are turned on. When off, they are gray. Use these tools to troubleshoot audio signals and verify connections and levels.

## Mute and Fader Groups

<b>Mute Groups</b>	Check the Mute group box to add the channel to a group. Muting any channel within the Mute group mutes all channels in the group.
<b>Fader Groups</b>	Check the Fader group box to add the channel to a group. All faders within the group are linked, and move together when a single fader is adjusted.

## Adjusting Input levels

Levels for analog and Dante channels are adjustable in the Input tab.

To monitor input levels before they reach the ANIUSB-MATRIX, set the metering to Pre-gain in the Settings menu. When adjusting the faders, set metering to Post-gain.

## Dante Sources

- 1. Check the source level before it reaches the Network Interface:**
  - Verify that the networked microphones or other Dante sources are operating at nominal output levels.
  - Adjust levels for MXA microphones in Designer.
- 2. Adjust the digital gain in Designer:**
  - Use the faders or manually enter a gain value.
  - The digital gain adjusts the level of the signal before it reaches the matrix mixer.
  - Mix the levels as high as possible without the loudest channel reaching the peak level (0 dB) on the meter.

**Note:** The matrix mixer provides crosspoint gain, to adjust separate submixes for different outputs.

## Analog Sources

Before you begin, verify that levels from the analog devices with adjustable output levels are operating at nominal levels. The fader adjusts the digital gain before the signal reaches the matrix mixer.

1. Match the analog input level setting according to the incoming signal level:

**Line:** (+4 dBu)

**Aux:** (-10 dBV)

2. Use the fader (digital gain) to adjust the mix going to the USB or Dante output channels.

## Adjusting Output Levels

**Tip:** Set the metering to post-fader in the settings menu to adjust output levels.

Adjust faders in the Outputs section as high as necessary, but make sure to avoid clipping (when the signal reaches 0 dBFS). Always adjust the input gain and crosspoint gain in the matrix mixer before the output gain.

**Analog output level:** Select Line, Aux, or Mic level output signal to match the sensitivity of the receiving device.

## Parametric Equalizer

Maximize audio quality by adjusting the frequency response with the parametric equalizer.

Common equalizer applications:

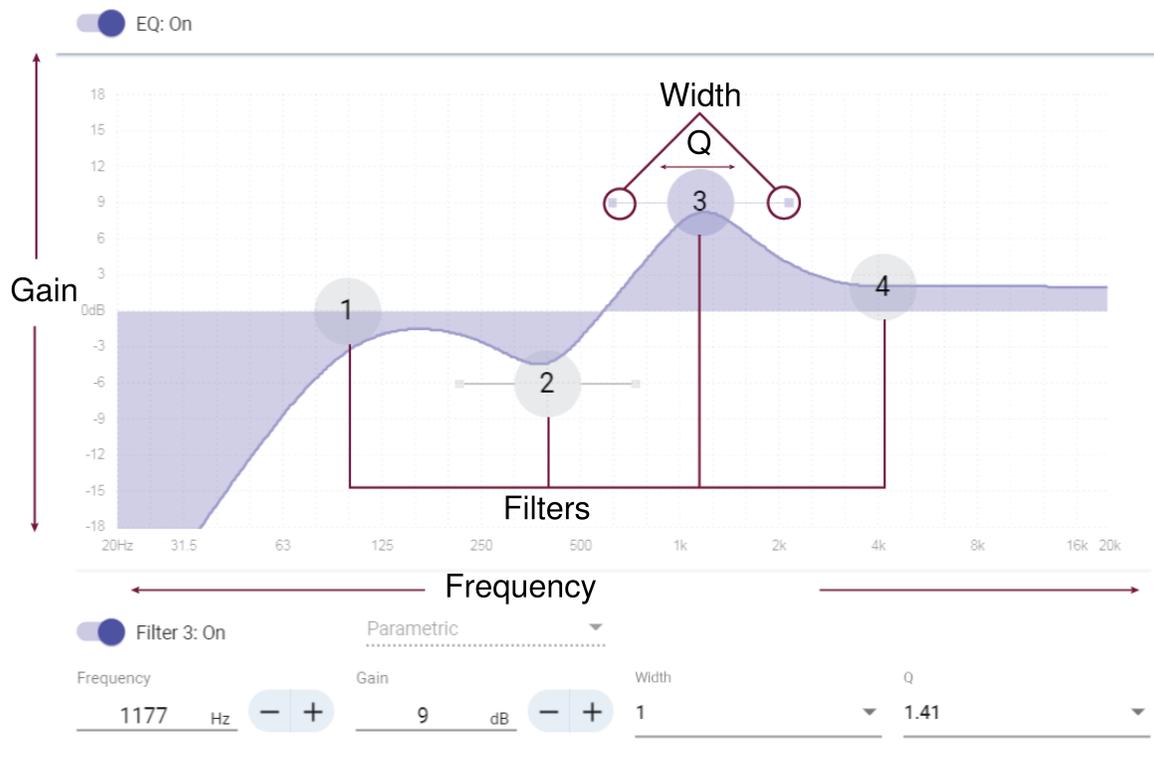
- Improve speech intelligibility
- Reduce noise from HVAC systems or video projectors
- Reduce room irregularities
- Adjust frequency response for reinforcement systems

## Setting Filter Parameters

Adjust filter settings by manipulating the icons in the frequency response graph, or by entering numeric values. Disable a filter using the checkbox next to the filter.

## PEQ Filter Settings

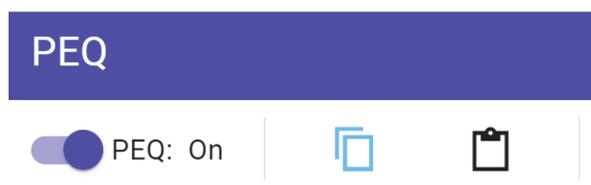
Setting	Function
<b>Filter Type</b>	<p>Only the first and last band have selectable filter types.</p> <p><b>Parametric:</b> Attenuates or boosts the signal within a customizable frequency range</p> <p><b>Low Cut:</b> Rolls off the audio signal below the selected frequency</p> <p><b>Low Shelf:</b> Attenuates or boosts the audio signal below the selected frequency</p> <p><b>High Cut:</b> Rolls off the audio signal above the selected frequency</p> <p><b>High Shelf:</b> Attenuates or boosts the audio signal above the selected frequency</p>
<b>Frequency</b>	Select the center frequency of the filter to cut or boost
<b>Gain</b>	Adjusts the level for a specific filter (+/- 18 dB)
<b>Q</b>	Adjusts the range of frequencies affected by the filter. As this value increases, the bandwidth becomes thinner.
<b>Width</b>	<p>Adjusts the range of frequencies affected by the filter. The value is represented in octaves.</p> <p><b>Note:</b> The Q and width parameters affect the equalization curve in the same way. The only difference is the way the values are represented.</p>



### Copy and Paste Equalizer Channel Settings

Use to quickly apply the same PEQ setting across multiple channels.

1. Select the PEQ of the desired channel.
2. Click copy.
3. Select the channel to apply the PEQ setting to and click paste.



### Equalizer Applications

Conferencing room acoustics vary based on room size, shape, and construction materials. Use the guidelines in following table.

#### Uses for EQ

EQ Application	Suggested Settings
Treble boost for improved speech intelligibility	Add a high shelf filter to boost frequencies greater than 1 kHz by 3-6 dB
HVAC noise reduction	Add a low cut filter to attenuate frequencies below 200 Hz

EQ Application	Suggested Settings
<p><b>Reduce flutter echoes and sibilance</b></p>	<p>Identify the specific frequency range that "excites" the room:</p> <ol style="list-style-type: none"> <li>1. Set a narrow Q value.</li> <li>2. Increase the gain to between +10 and +15 dB, and then experiment with frequencies between 1 kHz and 6 kHz to pinpoint the range of flutter echoes or sibilance.</li> <li>3. Reduce the gain at the identified frequency (start between -3 and -6 dB) to minimize the unwanted room sound.</li> </ol>
<p><b>Reduce hollow, resonant room sound</b></p>	<p>Identify the specific frequency range that "excites" the room:</p> <ol style="list-style-type: none"> <li>1. Set a narrow Q value.</li> <li>2. Increase the gain to between +10 and +15 dB, and then experiment with frequencies between 300 Hz and 900 Hz to pinpoint the resonant frequency.</li> <li>3. Reduce the gain at the identified frequency (start between -3 and -6 dB) to minimize the unwanted room sound.</li> </ol>

## Custom Presets

Use presets to quickly save and recall settings. Up to 10 presets can be stored on each device to match various seating arrangements. A preset saves all device settings except for the Device Name, IP Settings, and Passwords. Importing and exporting presets into new installations saves time and improves workflow. When a preset is selected, the name displays above the preset menu. If changes are made, an asterisk appears next to the name.

**Note:** Use the default settings preset to revert to the factory configuration (excludes Device Name, IP Settings, and Passwords).

Open the presets menu to reveal preset options:

<b>save as preset:</b>	Saves settings to the device
<b>load preset:</b>	Opens a configuration from the device
<b>import from file:</b>	Downloads a preset file from a computer onto the device. Files may be selected through the browser or dragged into the import window.
<b>export to file:</b>	Saves a preset file from the device onto a computer

## Matrix Mixer

The matrix mixer routes audio signals between inputs and outputs for simple and flexible routing:

- Send a single input channel to multiple outputs
- Send multiple input channels to a single output

## Crosspoint Gain

Crosspoint gain adjusts the gain between a specific input and output, to create separate submixes without changing input or output fader settings. Select the dB value at any crosspoint to open the gain adjustment panel.

**Gain staging:** Input fader > crosspoint gain > output fader

## Routing Channels

Connect inputs and outputs by selecting the box where they intersect.

## ANIUSB-MATRIX Default Routes

The matrix mixer creates these default routes. Adjust them to fit your needs.

	1	2	3	4
	Dante Output 1	Dante Output 2	Analog Output	USB Output
1 Dante Input 1	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0
2 Dante Input 2	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0
3 Dante Input 3	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0
4 Dante Input 4	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0
5 Analog Input	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0	<input checked="" type="checkbox"/> 0
6 USB Input	<input type="checkbox"/> 0	<input type="checkbox"/> 0	<input checked="" type="checkbox"/> 0	

## Use Call Status

Designer's call status feature uses microphone LEDs to show if you're in a videoconferencing call or not. This is a room-level feature, so it applies to all microphones in the same Designer room.

### To use call status:

1. Put all microphones and processors (ANIUSB-MATRIX, IntelliMix Room, or P300) in the same Designer room.
2. Select Auto route to create audio and mute control routes. You can also route audio manually.
3. Go to [Your room] > Settings > Call status to turn on call status.

When call status is on:

- Microphone LEDs off = Not in a call

- Microphone LEDs on = In a call

Call status is compatible with the following codecs:

- Microsoft Teams
- Microsoft Teams Rooms
- Zoom Client for Meetings
- Zoom Rooms

**Note:** If your codec is running on a computer with a Chrome operating system, call status will not work.

## Encryption

Audio is encrypted with the Advanced Encryption Standard (AES-256), as specified by the US Government National Institute of Standards and Technology (NIST) publication FIPS-197.

Encryption is not supported with third-party devices.

**Important:** For encryption to work:

- Devices must be online and support encryption.
- Encryption must be turned on for all devices in the room.
- You must disable AES67 in Dante Controller. AES67 and AES-256 can't be used at the same time.

To turn on encryption:

In an online room, select  > Audio encryption > Turn on encryption. You can auto generate a key or enter one manually.

To re-key or turn off encryption:

In an online room, select  > Audio encryption and enter any passwords.

## Set Up the 802.1X Protocol for a Device

Select Shure devices support the IEEE 802.1X port access protocol for network authentication.

**Important:** To use the 802.1X security protocol with Shure devices, set the network switch to multiple host authentication. You must also make accommodations to allow the audio network interface to connect to the network. The audio network interface doesn't support the 802.1X protocol.

Setting up 802.1X is a two-part process.

**To set up 802.1X, you will need:**

- Details about your authentication server's EAP method
- Any required credentials or certificates for that method, for example:
  - MD5 and PWD
    1. User ID and passphrase
  - TLS and PEAP
    1. User ID and passphrase
    2. Certificate (with certificate types) in the .PEM format
- Any passwords to access the devices if they are password locked

## Step 1: Configure Settings on Test Network

1. Connect the device to your test network and discover it using Designer.
2. Initialize the device if necessary. Open the device and go to **Settings > Network > 802.1X**.
3. Choose your EAP method from the menu.
4. Enter any required credentials and load any necessary certificates.
5. Press **Save** to save the 802.1X settings to the device.
6. Enable 802.1X and select **Reboot later**.

## Step 2: Connect to a Credentialed Network

1. Connect your device to the credentialed network.
2. Ensure that Designer is connected to the credentialed network.
3. Go to **Settings > Network > 802.1X** and enable 802.1X. Reboot the device for the 802.1X settings to take effect.
4. If the device doesn't appear in Designer after the reboot, reconnect to the test network and check all 802.1X settings for the selected EAP method.

## Turn Off or Clear 802.1X Settings

You can turn off 802.1X settings temporarily, or clear them from the device. Open the device and go to **Settings > Network > 802.1X**

- **Disable:** Click the 802.1X switch to turn off 802.1X settings. Click the switch again to enable 802.1X.
- **Clear:** Click **Clear 802.1X settings** to remove 802.1X settings from the device.

**Note:** Resetting to factory default clears all 802.1X settings.

## Change 802.1X Settings

You may need to change a device's 802.1X settings if the enterprise's 802.1X settings are changing. The best way to do this is to change the 802.1X settings on the devices, and then make changes to the authentication server.

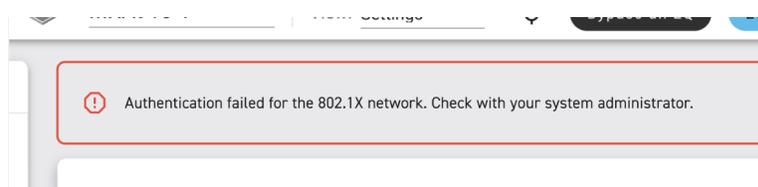
### To change device settings:

1. While still connected to the credentialed network, find the device in Designer and go to **Settings > Network > 802.1X**.
2. Make changes and click **Save**.
3. Make any changes to the authentication server.
4. Reboot your devices. The devices should connect to the credentialed network with the updated 802.1X settings.

## Troubleshooting 802.1X Setup Issues

If the device doesn't appear in Designer on the credentialed network, there's a problem with the device's 802.1X settings. To troubleshoot, take the device off the credentialed network and connect it to the test network. You can make any necessary changes to the 802.1X settings, and then reconnect to the credentialed network.

If you attempt to enable 802.1X on a device, but the authentication fails, you will see this notification:



If this occurs, check with your system administrator.

# Networking and Dante

## Switch and Cable Recommendations for Dante Networking

Switches and cables determine how well your audio network performs. Use high-quality switches and cables to make your audio network more reliable.

### Network switches should have:

- Gigabit ports. 10/100 switches may work on small networks, but gigabit switches perform better.
- Power over Ethernet (PoE) or PoE+ ports for any devices that require power
- Management features to provide information about port speed, error counters, and bandwidth used
- Ability to switch off Energy Efficient Ethernet (EEE). EEE (also known as "Green Ethernet") may cause audio dropouts and problems with clock synchronization.
- Diffserv (DSCP) Quality of Service (QoS) with strict priority and 4 queues

### Ethernet cables should be:

- Cat5e or better
- Shielded

For more information, [see our FAQ](#) about switches to avoid.

## Dante Flows for Shure Devices

Dante flows get created any time you route audio from one Dante device to another. One Dante flow can contain up to 4 audio channels. For example: sending all 5 available channels from an MXA310 to another device uses 2 Dante flows, because 1 flow can contain up to 4 channels.

Every Dante device has a specific number of transmit flows and receive flows. The number of flows is determined by Dante platform capabilities.

### Dante Flows for Shure Devices

Dante Platform	Shure Devices Using Platform	Transmit Flow Limit	Receive Flow Limit
<b>Brooklyn II</b>	ULX-D, SCM820, MXWAPT, MXWANI, P300, MXCWAPT	32	32
<b>Brooklyn II (without SRAM)</b>	MXA920, MXA910, MXA902, MXA710, AD4, AD600, APXD2	16	16
<b>IP Core</b>	MXA920-V3, MXA902-V3, MXA901	32	32
<b>Ultimo/UltimoX</b>	MXA310, ANI4IN, ANI4OUT, ANIUSB-MATRIX, ANI22, MXN5-C	2	2
<b>DEP</b>	ANIUSB-MATRIX-V3	2	2
<b>DAL</b>	IntelliMix Room	16	16

[Learn more about Dante flows in our FAQs](#) or from [Audinate](#).

## Pushing Names to the Dante Network

You can edit device and channel names by double-clicking on the device. You can also edit the device name on the routing page or in the properties panel.

To send Designer device and channel names to Dante Controller, double-click on a device and go to **Settings > General**, then select **Push to Dante**. You can also push these names to Dante when you deploy.

**Note:** Names appear in Dante Controller with "-d" attached.

## Compatibility with Dante Domain Manager

This device is compatible with Dante Domain Manager software (DDM). DDM is network management software with user authentication, role-based security, and auditing features for Dante networks and Dante-enabled products.

Considerations for Shure devices controlled by DDM:

- When you add Shure devices to a Dante domain, set the local controller access to Read Write. Otherwise, you won't be able to access Dante settings, perform a factory reset, or update device firmware.
- If the device and DDM can't communicate over the network for any reason, you won't be able to control Dante settings, perform a factory reset, or update device firmware. When the connection is reestablished, the device follows the policy set for it in the Dante domain.
- If Dante device lock is on, DDM is offline, or the configuration of the device is set to Prevent, some device settings are disabled. These include: Dante encryption, MXW association, AD4 Dante browse and Dante cue, and SCM820 linking.

Refer to [Dante Domain Manager's documentation](#) for more information.

**Note:** Applies to firmware 4.1.x and newer.

## Change IP Settings

You can change IP configurations in Shure Designer. By default, they are set to Automatic (DHCP). DHCP enables a device to accept IP settings from a DHCP server, or automatically fall back to link-local settings when no DHCP is available. IP addresses may also be manually set.

**To change IP configurations:**

1. Open Designer and go to [Your room] > [Device] > **Settings > IP configuration**.
2. Select Auto or Manual. If Auto is used, addresses will be automatically assigned.
3. For Manual, enter the IP settings.

## Setting Latency

Latency is the amount of time for a signal to travel across the system to the outputs of a device. To account for variances in latency time between devices and channels, Dante has a predetermined selection of latency settings. When the same setting is selected, it ensures that all Dante devices on the network are in sync.

These latency values should be used as a starting point. To determine the exact latency to use for your setup, deploy the setup, send Dante audio between your devices, and measure the actual latency in your system using Audinate's Dante Controller software. Then round up to the nearest latency setting available, and use that one.

Use Audinate's Dante Controller software to change latency settings.

## Latency Recommendations

Latency Setting	Maximum Number of Switches
0.25 ms	3
0.5 ms (default)	5

Latency Setting	Maximum Number of Switches
1 ms	10
2 ms	10+

## IP Ports and Protocols

### Shure Control

Port	TCP/UDP	Protocol	Description	Factory Default
21	TCP	FTP	Required for firmware updates (otherwise closed)	Closed
22	TCP	SSH	Secure Shell Interface	Closed
23	TCP	Telnet	Not supported	Closed
53	UDP	DNS	Domain Name System	Closed
67	UDP	DHCP	Dynamic Host Configuration Protocol	Open
68	UDP	DHCP	Dynamic Host Configuration Protocol	Open
80*	TCP	HTTP	Required to launch embedded web server	Open
443	TCP	HTTPS	Not supported	Closed
2202	TCP	ASCII	Required for 3rd party control strings	Open
5353	UDP	mDNS <sup>†</sup>	Required for device discovery	Open
5568	UDP	SDT (multicast) <sup>†</sup>	Required for inter-device communication	Open
57383	UDP	SDT (unicast)	Required for inter-device communication	Open
8023	TCP	Telnet	Debug console interface	Closed
8180	TCP	HTML	Required for web application (legacy firmware only)	Open
8427	UDP	SLP (multicast) <sup>†</sup>	Required for inter-device communication	Open
64000	TCP	Telnet	Required for Shure firmware update	Open

\*These ports must be open on the PC or control system to access the device through a firewall.

†These protocols require multicast. Ensure multicast has been correctly configured for your network.

[See Audinate's website](#) for information about ports and protocols used by Dante audio.

# Using Command Strings

This device receives logic commands over the network. Many parameters controlled through Designer can be controlled using a third-party control system, using the appropriate command string.

## Common applications:

- Mute
- LED color and behavior
- Loading presets
- Adjusting levels

A complete list of command strings is available at:

[pubs.shure.com/command-strings/ANIUSB-Matrix](https://pubs.shure.com/command-strings/ANIUSB-Matrix).

## Reset

The reset button is located inside a small hole in the rear panel. Use a paperclip or other small tool to press the button.

There are two hardware reset functions:

### Network reset (press button for 4-8 seconds)

Resets all Shure control and audio network IP settings to factory defaults

### Full factory reset (press button for longer than 8 seconds)

Restores all network and Designer settings to the factory defaults.

## Software Reset Options

To simply revert settings without a complete hardware reset, use one of the following options:

**Reboot Device:**Power-cycles the device as if it were unplugged from the network. All settings are retained when the device is rebooted.

**Default Settings:** To revert audio settings back to the factory configuration (excluding Device Name, IP Settings, and Passwords), select Load Preset and choose the default settings preset.

## Troubleshooting

Problem	Solution
Software lags in Google Chrome browser	Problem is browser-related. Turn off hardware acceleration option in Chrome.
Sound quality is muffled	Use equalizer to adjust frequency response. See the equalizer applications for the appropriate use.
Audio sounds too high or too low in pitch	Make sure that the sample rate settings for Playback and Recording are the same in your computer's sound settings. If

Problem	Solution
	these sample rates do not match, the audio may sound too high or too low in pitch.
<b>Hardware does not show up in device discovery</b>	Ensure the devices are powered Ensure PC and equipment are on the same network and set to the same subnet Turn off other network interfaces not used to connect to the device (including WiFi) Check that DHCP server is functioning (if applicable) Reset the device
<b>No audio</b>	Verify the ANIUSB-MATRIX is selected as the audio device in the audio devices or properties panel on the computer Audio channels must be routed to an output through the matrix mixer Connections between devices must be established in Dante Controller™ software Check cables Verify that input/output channels are not muted Check that fader levels are not set too low Make sure there is not an encryption error -- a passphrase mismatch or encryption only enabled on one device disrupts audio.
<b>Cannot route Dante audio channels</b>	Install latest version of Dante Controller from Audinate®, available at <a href="http://www.audinate.com">www.audinate.com</a> .
<b>Hardware does not power on</b>	The network switch must supply Power over Ethernet. Otherwise, a PoE injector must be used Check network cables and connections

## Event Log

The event log provides a detailed account of activity from the moment the device is powered on. The log collects up to 1,000 activity entries and time-stamps them relative to the last power cycle. The entries are stored in the internal memory and are not cleared when the device is power-cycled. The export feature creates a CSV (comma separated values) file to save and sort the log data.

Refer to the log file for details when troubleshooting or when working with Shure support.

### To view the event log:

1. Open the device's web application. As of Designer 6 and newer, there is no longer an event log in Designer.
2. Select Help > View event log.

Severity Level

### Information

An action or event has been successfully completed

## Warning

An action cannot be complete, but overall functionality is stable

## Error

A problem has occurred that could inhibit functionality.

Log Details

## Description

Provides details on events and errors, including IP address and subnet mask.

## Time Stamp

*Power cycles:days:hours:minutes:seconds* since most recent boot-up.

## Event ID

Indicates event type for internal reference.

**Tip:** Use the filter to narrow down results. Select a category heading to sort the log.

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# Specifications

## General

### Analog Connections

<b>Input</b>	(1) 3-pin block connector (Active Balanced)
<b>Output</b>	(1) 3-pin block connector (Impedance Balanced)

### USB Connections

(1) USB 2.0, Type B

Single port carries 1 input and 1 output channel (Summed mono)

### Network Connections (Dante Digital Audio)

(1) RJ45

4 input channels, 2 output channels

### Polarity

Non-inverting, any input to any output

### Power Requirements

Power over Ethernet (PoE), Class 0. (PoE Plus compatible).

### Power Consumption

6.5W, maximum

### Weight

668 g (1.5 lbs)

## Dimensions

*H x W x D*

4 x 14 x 12.8 cm ( 1.6 x 5.5 x 5.0 in.)

## Control Software

Shure Designer

## Operating Temperature Range

-6.7°C (20°F) to 40°C (104°F)

## Storage Temperature Range

-29°C (-20°F) to 74°C (165°F)

## Thermal Power Dissipation

<b>Maximum</b>	6.8W ( 23.0BTU/hr)
<b>typical</b>	6.0W ( 20.8BTU/hr)

## Audio

### Frequency Response

*+1, -1.5 dB*

20 to 20,000 Hz

### Dante Digital Audio

<b>Sampling Rate</b>	48 kHz
<b>Bit Depth</b>	24

### USB Audio

<b>Sampling Rate</b>	48 kHz
<b>Bit Depth</b>	16, 24

## Latency

<b>Does not include Dante latency</b>	Analog to Analog	0.98 ms
	Analog to Dante	0.39 ms
	Dante to Analog	0.72 ms
	Dante to Dante	0.14 ms

## Dynamic Range

*20 Hz to 20 kHz, A-weighted, typical*

<b>Analog-to-Dante</b>	113 dB
<b>Dante-to-Analog</b>	117 dB

## Equivalent Input Noise

*20 Hz to 20 kHz, A-weighted, input terminated with 150Ω*

<b>Line</b>	-86 dBV
<b>Aux</b>	-98 dBV

### Total Harmonic Distortion

@ 1 kHz, 0 dBV Input, 0 dB analog gain

<0.05%

### Common Mode Rejection Ratio

150Ω balanced source @ 1 kHz

>70 dB

### Impedance

10.6 kΩ

### Input Clipping Level

<b>Line</b>	+27 dBV
<b>Aux</b>	+15 dBV

### Output Clipping Level

<b>Line</b>	+20 dBV
<b>Aux</b>	+0 dBV
<b>Mic</b>	-26 dBV

### Built-in Digital Signal Processing

<b>Per Channel</b>	Equalizer (4-band Parametric, Analog and USB output channels only) , Mute, Limiter, Gain ( 140 dB range)
<b>System</b>	Matrix mixer

### Networking

#### Cable Requirements

Cat 5e or higher (shielded cable recommended)

## Optional Accessories and Replacement Parts

<b>19" rack tray</b>	CRT1
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## Safety Information

### IMPORTANT SAFETY INSTRUCTIONS

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. Allow sufficient distances for adequate ventilation and install in accordance with the manufacturer's instructions.
8. DO NOT install near any heat sources such as open flames, radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not place any open flame sources on the product.
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 wider 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. ONLY USE attachments/accessories specified by the manufacturer.
12. USE only with a 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. DO NOT expose the apparatus to dripping and splashing. DO NOT put objects filled with liquids, such as vases, on the apparatus.
16. The MAINS plug or an appliance coupler shall remain readily operable.
17. The airborne noise of the Apparatus does not exceed 70dB (A).
18. Apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.
19. To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
20. Do not attempt to modify this product. Doing so could result in personal injury and/or product failure.
21. Operate this product within its specified operating temperature range.

	This symbol indicates that dangerous voltage constituting a risk of electric shock is present within this unit.
	This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

## Important Product Information

The equipment is intended to be used in professional audio applications.

**Note:** This device is not intended to be connected directly to a public internet network.

EMC conformance to Environment E2: Commercial and Light Industrial. Testing is based on the use of supplied and recommended cable types. The use of other than shielded (screened) cable types may degrade EMC performance.

Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate this equipment.

**Industry Canada ICES-003 Compliance Label:** CAN ICES-3 (B)/NMB-3(B)

Authorized under the verification provision of FCC Part 15B.

Please follow your regional recycling scheme for batteries, packaging, and electronic waste.

Dante is a registered trademark of Audinate Pty Ltd.

## Information to the user

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. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the manufacturer's instruction manual, may cause interference with radio and television reception.

**Notice:** The FCC regulations provide that changes or modifications not expressly approved by Shure Incorporated could void your authority to operate this equipment.

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 the receiver.
- Connect the equipment to 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.
2. This device must accept any interference received, including interference that may cause undesired operation.

The CE Declaration of Conformity can be obtained from: [www.shure.com/europe/compliance](http://www.shure.com/europe/compliance)

Authorized European representative:

Shure Europe GmbH

Global Compliance

Jakob-Dieffenbacher-Str. 12

75031 Eppingen, Germany

Phone: +49-7262-92 49 0

Email: [info@shure.de](mailto:info@shure.de)

[www.shure.com](http://www.shure.com)

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

The CE Declaration of Conformity can be obtained from Shure Incorporated or any of its European representatives. For contact information please visit [www.shure.com](http://www.shure.com)