MXA310

Table Array Microphone

Shure MXA310 table array microphone manual. Learn how to install, configure, and deploy this small, versatile networked microphone with 6 polar pattern options

Version: 5.9 (2025-E)

Table of Contents

MXA310
Table Array Microphone

Overview

General Description

The Microflex® Advance™ table array is a premium networked tabletop microphone for AV conferencing environments, including boardrooms, huddle rooms, and multi-purpose spaces. Revolutionary technology from the Shure DSP suite includes Steerable Coverage™, with selectable polar patterns on 4 independent channels to capture participant audio. The innovative new toroid polar pattern delivers 360° coverage, while rejecting sound from directly above the microphone. Control the microphone with Shure Designer software, or a browser-based web application. The microphone integrates seamlessly with Dante™ digital networked audio and third-party preset controllers, including Crestron and AMX, to deliver a high-quality AV conferencing experience that appeals equally to integrators, consultants, and meeting participants.

Features

Configurable Coverage

- Steerable Coverage delivers precise pick-up for up to 4 independent lobes
- Shure DSP Suite provides fast-acting automatic mixing and channel equalization
- Innovative toroid polar pattern delivers 360° coverage, while rejecting sound from directly above the microphone to reduce noise caused by HVAC systems or video projectors.

Software Control

- Shure Designer software provides comprehensive microphone and pattern control
- With Designer, you can also design coverage with online and offline devices, and route audio between Shure devices
- If Designer isn't available, use the browser-based web application to control the microphone

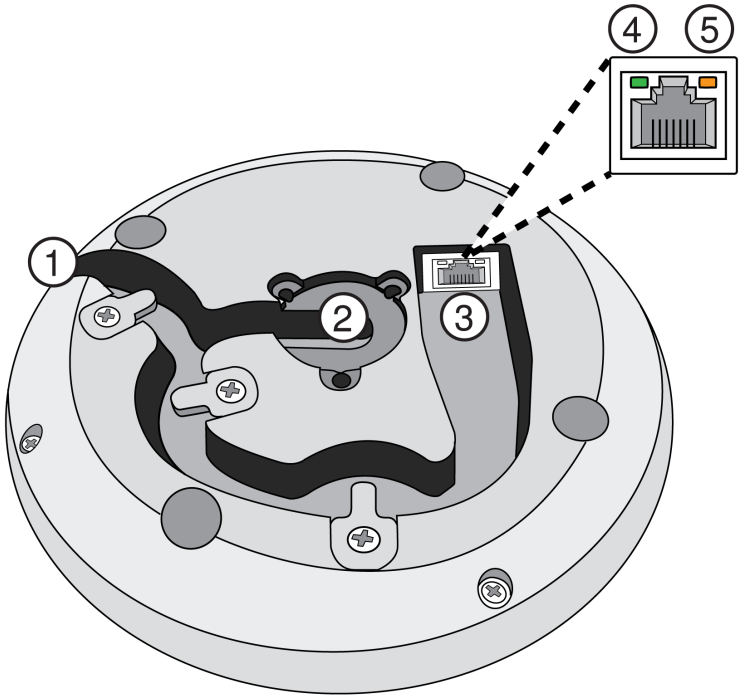
Network Connectivity

- Four discrete audio channels and an additional automix channel are delivered over a single network cable
- Dante™ digital audio coexists safely on the same network as IT and control data, or can be configured to use a dedicated network
- Control strings available for third-party preset controllers including Crestron and AMX

Professional Design

- Sleek, low-profile industrial design blends with contemporary board rooms and meeting spaces
- Configurable multi-colored LED light ring matches the environment, displays mute settings, and confirms coverage settings
- Available in white, black, and aluminum finishes

MXA310 Parts



① Cable Exit

Guide the cable under the tabs and through the routing to exit from the side.

② Bottom Cable Exit

Guide the cable under the tabs and through the bottom exit for permanent table installations.

Note: *Use the cable plug accessory when the cable is routed through the bottom.*

③ Network Port

RJ-45 jack for network connection.

④ Network Status LED (Green)

Off = no network link

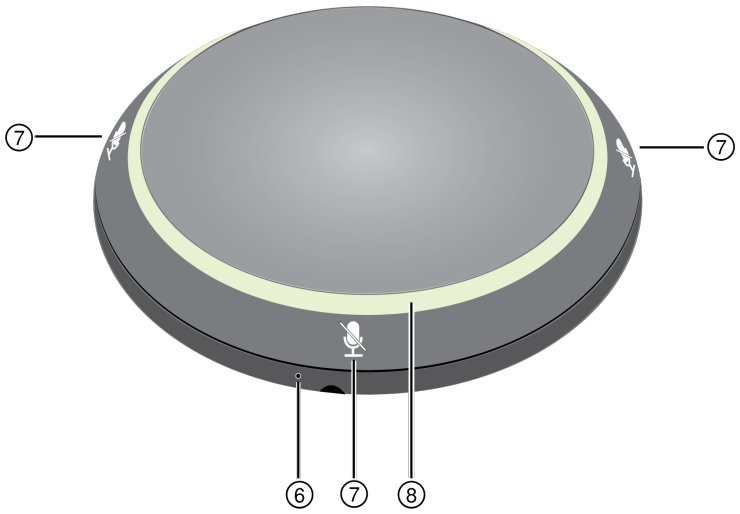
On = network link established

Flashing = network link active

⑤ Network Speed LED (Amber)

Off = 10/100 Mbps

On = 1 Gbps



⑥ Reset Button

Use a paperclip or similar tool to push the reset button.

⑦ Mute Buttons

Four touch-sensitive buttons control the mute status for each channel.

⑧ LED Light Ring

Indicates mute status, with configurable color and behavior states.

LED Light Ring

You can adjust LED light ring settings using Designer or the device web application.

In Designer, go to `[Your room]` > `MXA310` > `Settings` > `Lights`.

In the web application, go to `Configuration` > `Light Ring`.

LED Default Settings

Microphone Status	LED Behavior
Active	Green (solid)
Mute	Red (solid)
Hardware identification	Green (flashing) **Device identify:** Entire light ring **Channel identify:** Light ring segment
Firmware update in progress	Green (ring fills up, turns off, repeats)

Microphone Status	LED Behavior
Reset	**Network reset:** Red (rotates around ring) **Factory reset:** Blue (rotates around ring)
Error	Red (split, alternate flashing). See the event log in the web application for details.
Device power-up	Blue (rotates around ring)

Light ring properties are configurable to match room or enterprise-wide conventions and aesthetics.

Brightness

Adjusts the intensity level of the LED light ring

Lighting Style

Segments are divided to show individual channels.

Ring is a continuous LED

Display Automix Gating

Indicates a channel is off (audio signal has dropped below the gate threshold). When enabled, the lighting style automatically switches to segment mode.

Off: LED light ring turns off when a channel gates off

Follow mute color: LED light ring switches to assigned mute color when a channel gates off

Unmute Behavior

LED activity when the microphone is active

Unmute Color

LED color when the microphone is active

Mute Behavior

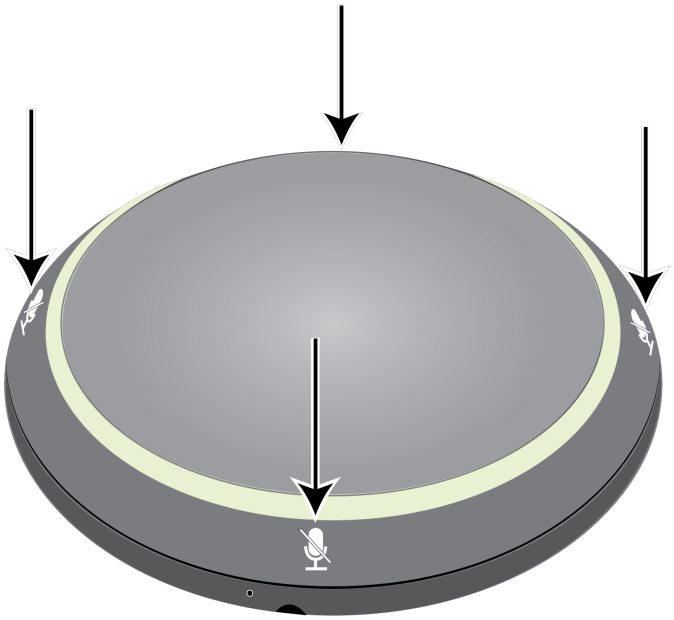
LED activity when the microphone is muted

Mute Color

LED color when the microphone is muted

Mute Buttons

The microphone has 4 touch-sensitive mute buttons around the edge of the microphone. Pressing any button mutes the entire device. You can mute channels individually using Shure Designer software or the web application. If the LEDs are set to display segments, the individual channel mutes are visible on the device. If they are set to ring, the LEDs display the device mute status.



To adjust button properties in Designer, go to `[Your room]` > `MXA310` > `Settings` > `Logic control`.

To adjust button properties in the web application, go to `Configuration` > `Button Control`.

Mute Control Function

- **Local:** Mutes/unmutes audio from the microphone
- **Logic out:** Sends a command string to a control system to mute the audio farther down the signal path
- **Disabled:** Button is inactive

Mute Control Mode

- **Toggle on/off:** Press the button to switch between mute and active states
- **Push to talk:** Hold the button to activate the microphone when speaking
- **Push to mute:** Hold the button to mute the microphone

Default Toggle State

Determines whether the microphone is muted or active when powered on

Power Over Ethernet (PoE)

This device requires PoE to operate. It is compatible with both **Class 0** and **Class 2** PoE sources.

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

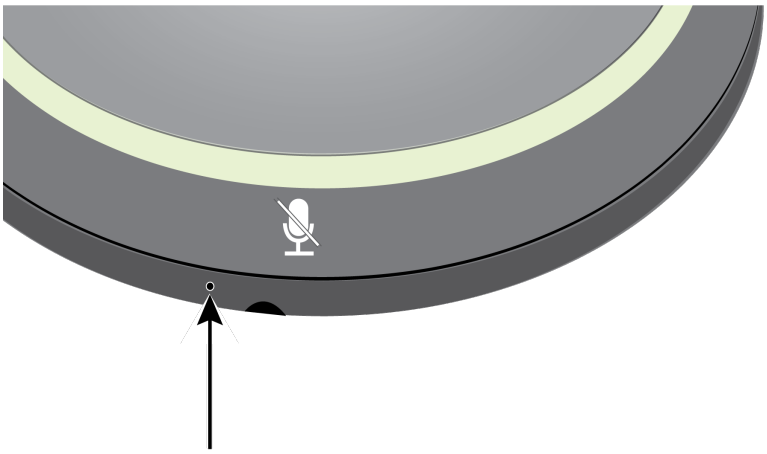
- A network switch that provides PoE
- A PoE injector device

What's in the Box

Cable-exit plug (black)	65A29429
Cable-exit plug (white)	65B29429
Cable-exit plug (silver)	65C29429
Mounting tube wing nut	65A27351
Mounting tube	31A2165
Rubber Isolation Ring	66A405
Nylon cable ties (4)	80A583

Reset

The reset button is located inside a small hole in the lower half of the microphone. Use a paperclip or other small tool to press the button.



There are 2 reset functions:

Network reset (press button for 4-8 seconds)

Resets all Shure control and audio network IP settings to factory defaults. Red LED rotates around ring.

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

Restores all network and web application settings to the factory defaults. Blue LED rotates around ring.

Software Reset Options

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

Reboot Device (`Settings` > `Factory Reset`): Power-cycles the device as if it were unplugged from the network. All settings are retained when the device is rebooted.

Restore Factory Defaults (`Settings > Factory Reset`): Restores all network and Designer settings to the factory defaults. This is the same as performing a full factory reset using the reset button on the device.

Default Settings (`Presets > Restore default settings`): Restores audio settings back to factory settings (excluding device name, IP settings, and passwords).

MXA310 Control Software

There are 2 ways to control the MXA310:

- **Option 1:** Use Shure Designer software
  - Control all Shure devices in one place
  - Route audio to and from Shure devices
- **Option 2:** Access the MXA310's web application with Shure Web Device Discovery
  - Control 1 microphone at a time
  - Route audio with Dante Controller software

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.

You can also access device settings using Shure Web Device Discovery.

Accessing the Web Application without the Discovery App

If the Discovery application is not installed, the web application can be accessed by typing the DNS name into an internet browser. The DNS name is derived from model of the unit, in combination with the last three bytes (six digits) of the MAC address, and ending in .local.

Format Example: If the MAC address of a unit is 00:0E:DD:AA:BB:CC, then the link is written as follows:

MXA310: http://MXA310-aabbcc.local

Microphone Placement

Each microphone has 4 channels that can be aimed independently, based on the seating arrangement. Each channel features independent polar patterns and additional channel settings. You can control these settings in Shure Designer software or in the device's web application.

Designer software provides increased positioning flexibility over traditional conferencing microphones:

- Configurable pickup areas can be rotated and modified for the number of talkers.
- Network connectivity, device identification, and presets allow moving, adding and removing microphones with ease.

- Independent channels and automixing make Dante® signal routing simple and flexible.
- Customized presets can be saved to immediately recall different room configurations.

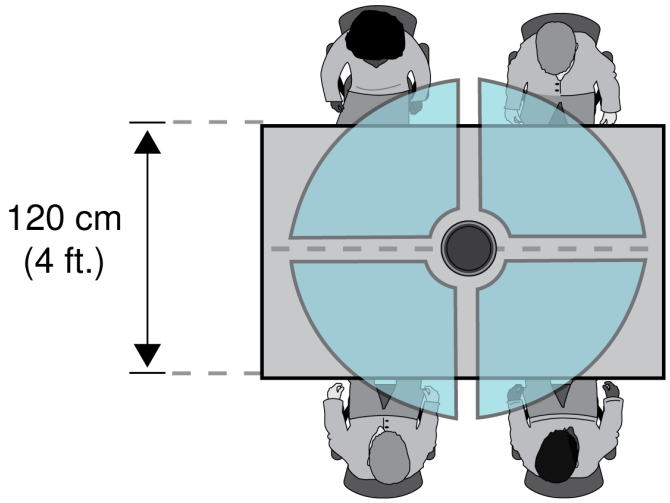
Seating Scenarios

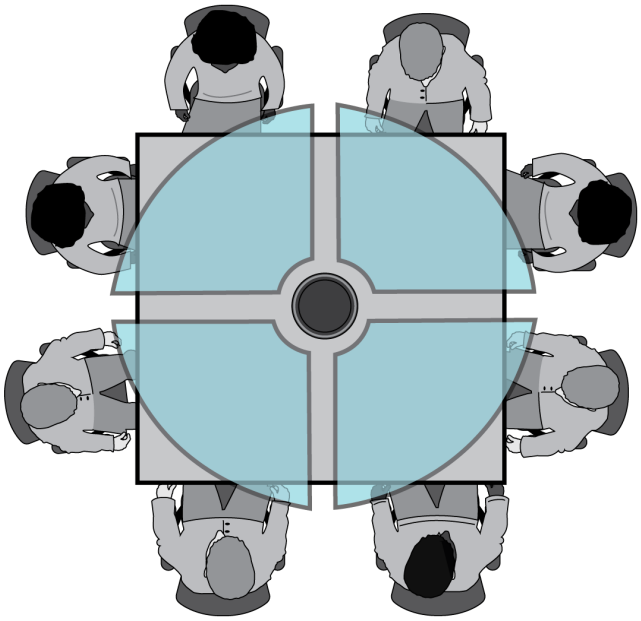
Each channel can capture one or several talkers. In rooms with flexible furniture arrangements, microphones can be moved to cover various seating arrangements as long as they are plugged into the same network.

Note: Settings are saved on each microphone, and are retained when plugged into a different network port. Presets can be recalled and deployed using Designer software, the web application, or an external control system.

Single-Microphone Applications (Multiple Channels)

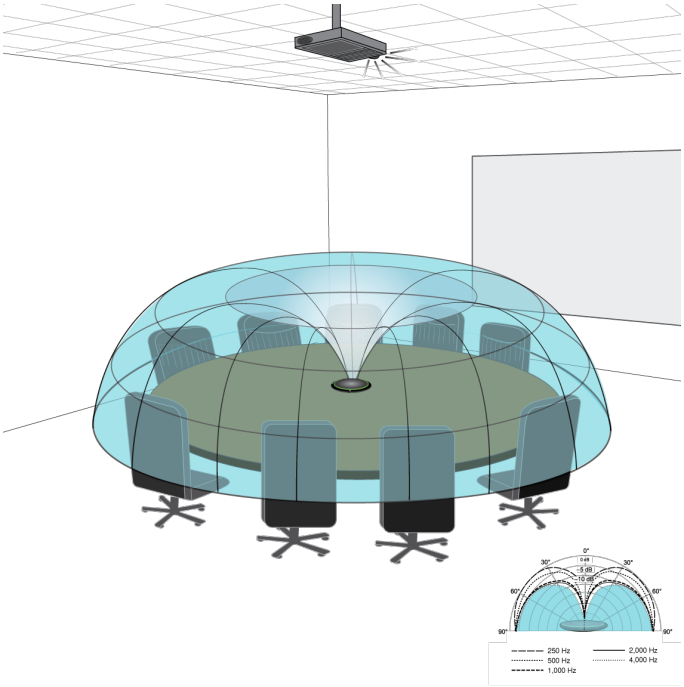
With four independent channels and polar patterns, coverage can be customized to match the table shape, size, and seating arrangement. The automatic mixing feature helps reduce extraneous noise (such as typing or paper shuffling) from interfering with speech intelligibility on the far end.



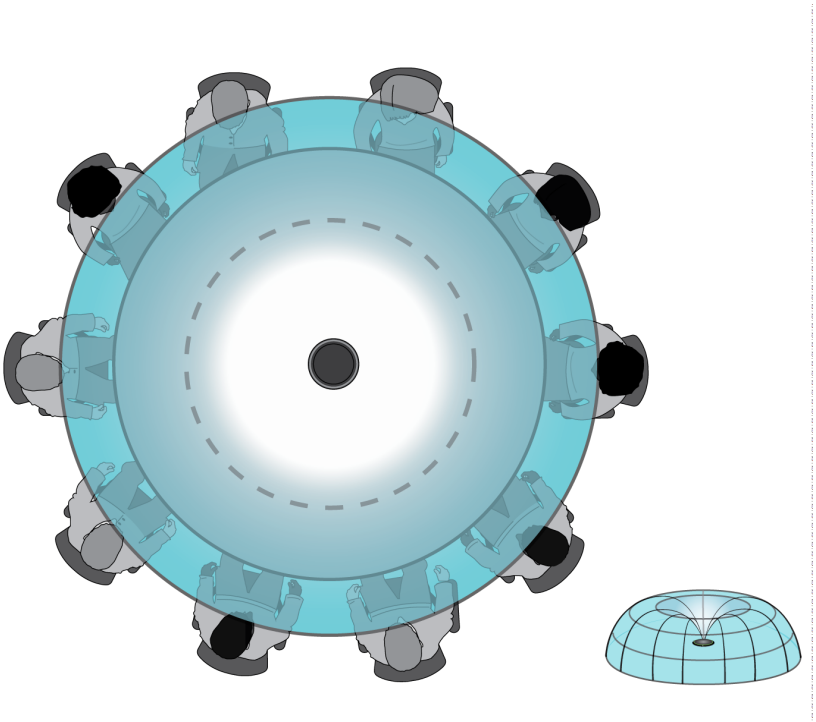


Toroid Pattern Applications

The toroid pattern rejects sound from directly above the microphone to reduce noise from video projectors or other sources of unwanted sound. It is the simplest way to ensure equal coverage among all talkers, while retaining the benefits of the rejection provided by a directional polar pattern. When this pattern is used, the audio is sent over a single channel. Therefore, when automatic mixing is desired, configure the microphone to use multiple directional patterns instead of the toroid pattern.



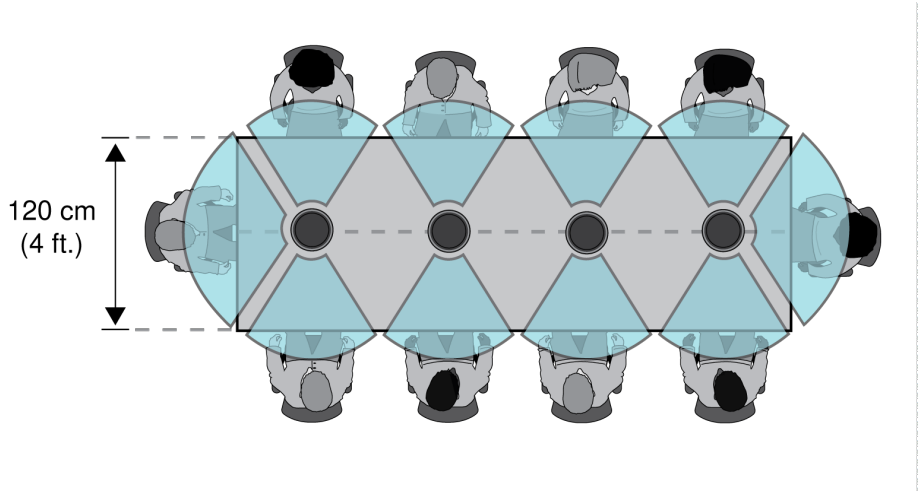
Noise from a ceiling-mounted projector is rejected, while all talkers are covered.



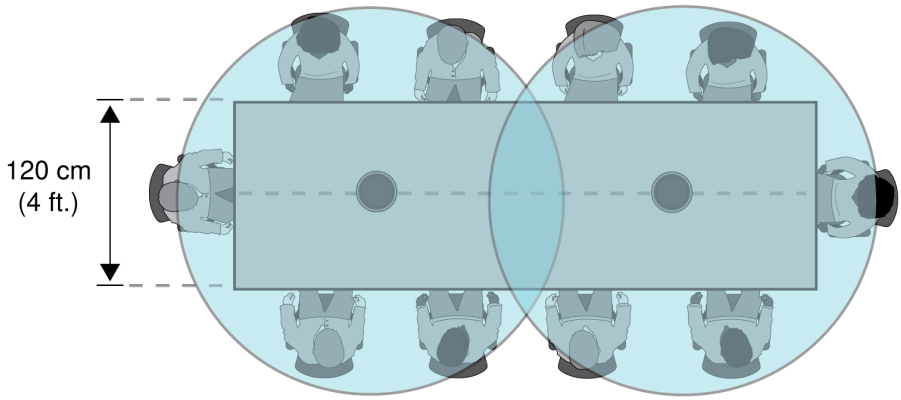
For a table with a single microphone and more than 4 talkers, the toroid pattern to ensures that all voices are heard equally.

Coverage With Multiple Microphones

For large tables, a series of microphones captures all talkers. Place the microphones in the center of the table for balanced pickup and accurate aiming. For the best audio quality and clarity, use enough microphones so that each talker has their own channel.



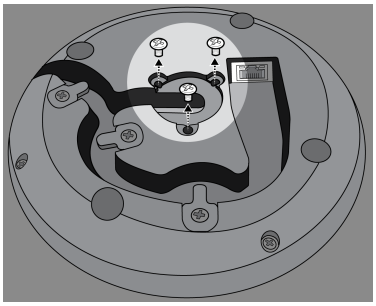
A table with 10 people is covered by 4 microphones, with an independent channel for each person.



For a large table with 2 microphones, place the microphones to cover equally sized areas. Use the Toroid or Omnidirectional setting to cover the entire table.

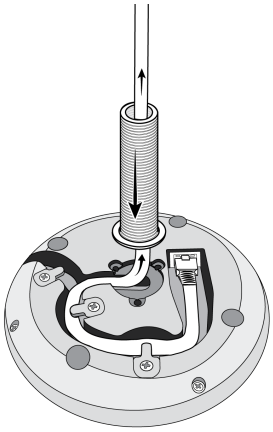
Permanent Table Installation

1. Remove the 3 screws located in the center on the bottom of the microphone

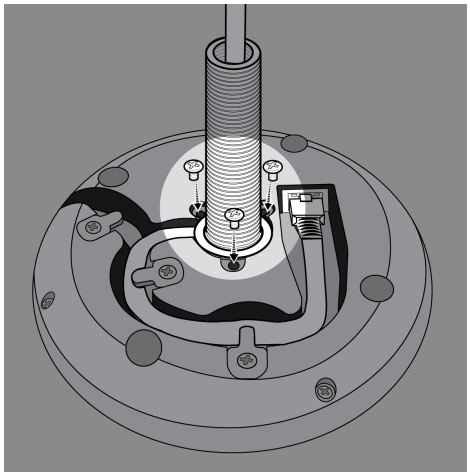


2. Plug a network cable into the microphone and guide it through the center exit path. When the cable is secured, guide it through the tube.

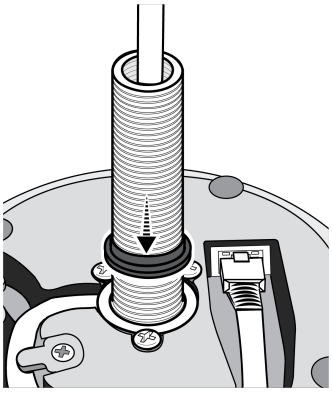
   Note: *If necessary, remove the retaining tabs to install thicker cable. Replace them after the cable is installed.*



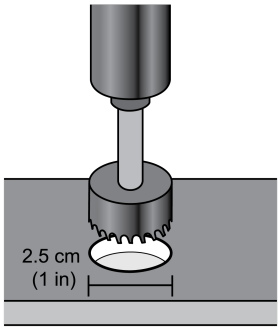
3. Align the tube into the recessed area in the center of the microphone. Install the 3 screws (removed in step 1) to secure the tube.



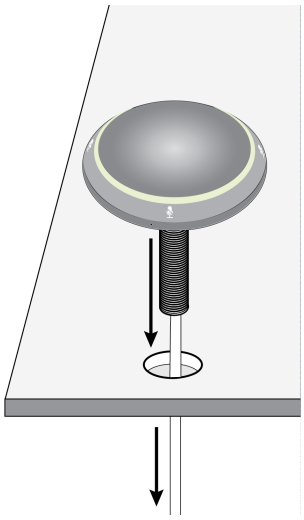
4. Slide one of the rubber washers to the base of the tube.



5. Drill a 1-inch (2.5 cm) hole through the table.

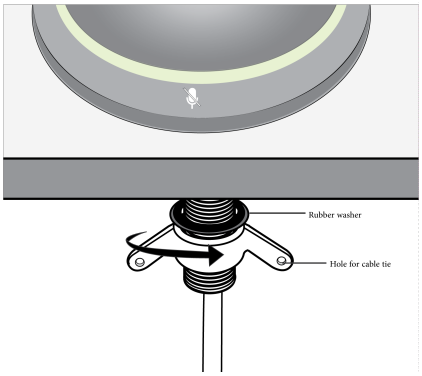


6. Guide the cable through the hole in the table. Then, place the tube through the hole in the table and gently press the microphone down.



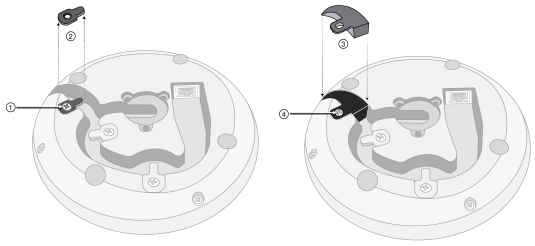
7. Attach the remaining rubber washer and wing nut from underneath the table. Then, tighten the wing nut to secure the microphone on the table.

   Optional: use the hole in the wing nut to insert a cable tie for cable management.



Installing the Cable-Exit Plug

The plug covers the cable exit for permanent installations in which the cable is routed down through a table.

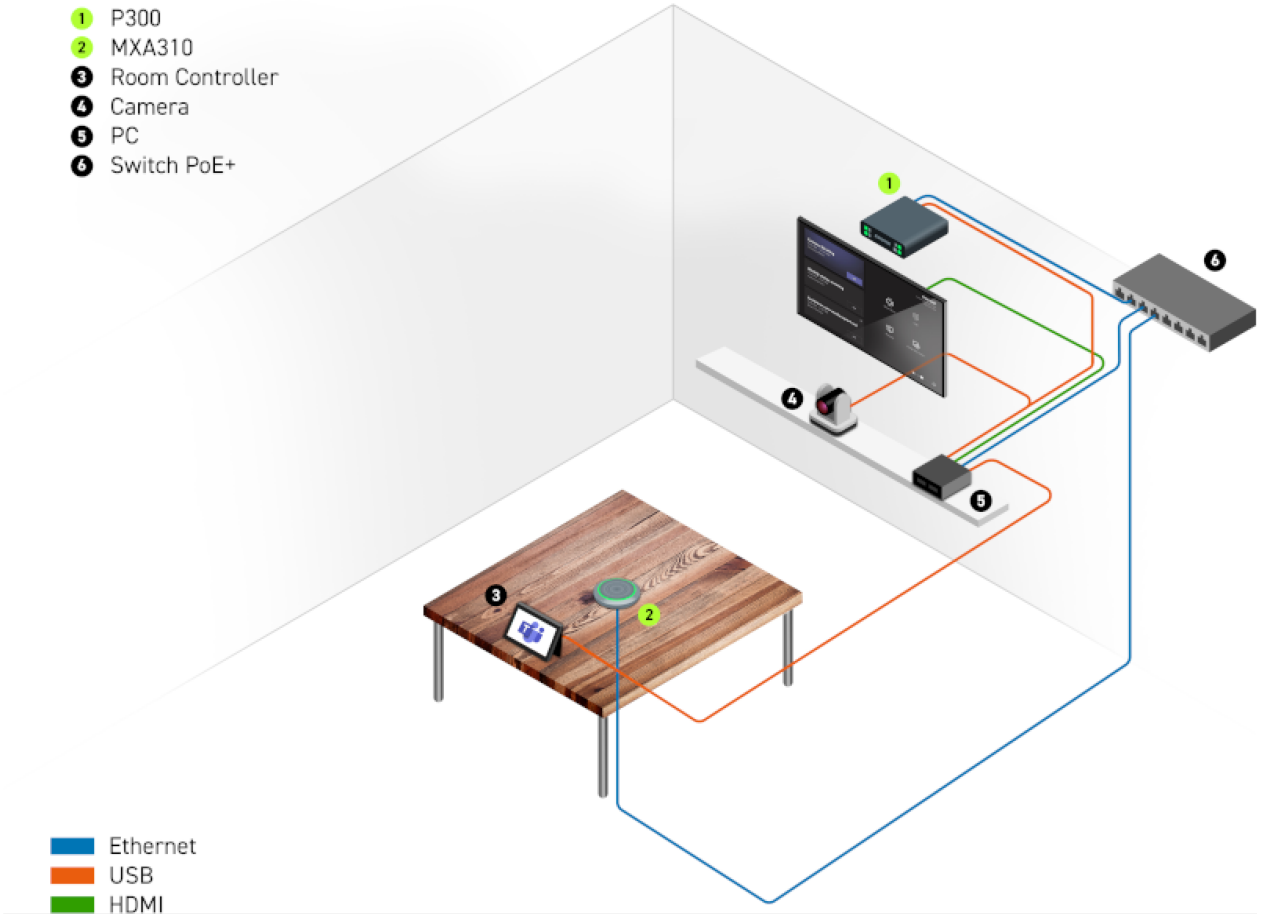


1. Remove the screw that holds in the cable-retaining tab closest to the cable exit
2. Remove the cable-retaining tab
3. Insert the plug
4. Replace the screw to secure the plug

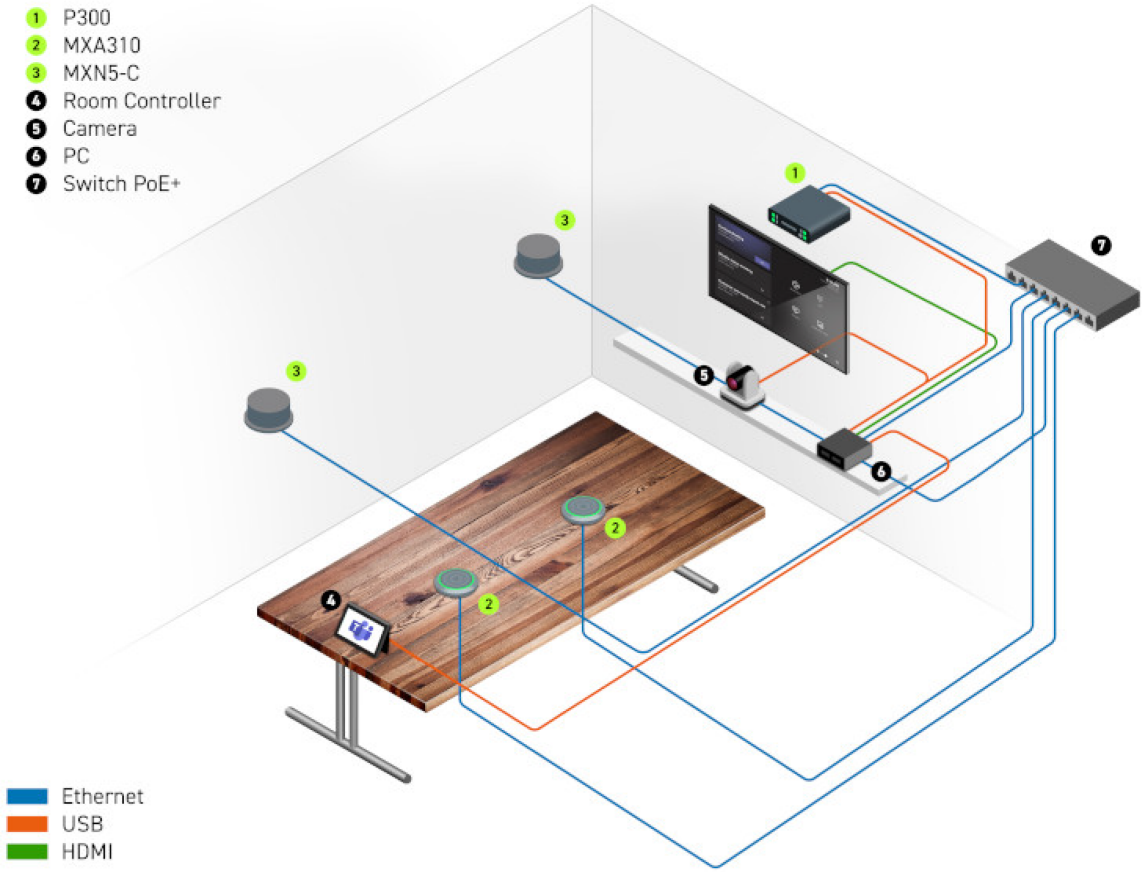
MXA310 Use Cases

The MXA310 fits many different types of rooms. Install 1 microphone for smaller rooms, or install multiple microphones to cover a larger space. Here are 2 common use cases for the MXA310:

Small Room with MXA310 and P300



Medium Room with 2 MXA310s, 2 MXN5-Cs, and P300



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.

Microphone Configuration

The microphone features multiple configurations to adapt to any meeting space. Adjust coverage based on:

- Table size and shape
- Number of meeting participants
- Participant seating arrangement

When you open the MXA310 in Designer, there is 1 channel with toroid coverage. To add more channels, select Add channel from the Coverage view.

Change the Polar Pattern

To change a channel's polar pattern, go to:

- **Designer:** `[Your room]` > `MXA310` > `Coverage` > `Select channel` > `Properties` > `Polar pattern`
- **Web application:** `Configuration` > `Coverage` > `Select channel` > `Polar pattern`

Aim Microphone Channels

You can aim all microphone channels at individual talkers to provide the clearest possible signal. Omnidirectional and toroid polar patterns cover the entire space around the MXA310 and can't be aimed.

To adjust a channel's position:

- **Designer:** `[Your room]` > `MXA310` > `Coverage` > `Select channel`. Click and drag the channel into position or use the Properties menu.
- **Web application:** `Configuration` > `Coverage` > `Select channel`. Click and drag the channel into position or use the Properties menu.

Templates (Web Application)

Use a template as a starting point when configuring coverage. Templates only adjust coverage, and do not affect gain levels or other settings.

1. Select the template that is the closest match to the seating scenario.
2. Select OK.
3. Select Add Channel or Remove Channel to adjust coverage.

MXA310 Coverage Templates (Web Application)

Template	Directional Characteristic	Use When
 **Omnidirectional**	Picks up sound with equal sensitivity from all directions	Participants are likely to move around, or when additional sound sources are located away from the microphone. The omnidirectional pattern performs best in a quiet, controlled environment. **Note:** Omnidirectional channels are not sent to the automix channel.
 **Toroid**	Picks up sound from the edges of the microphone, while rejecting sounds from directly above it.	Rooms have a higher level of ambient noise, or when noise from above is a concern (a video projector, for example).
 **Bidirectional**	Captures sound on two opposite sides of the microphone in a figure-8 pattern	Two talkers are facing each other, sitting on opposite sides of a table. The bidirectional pattern provides better off-axis rejection than the two talkers setting, but does not allow independent gain adjustment for each talker.
 **Multiple Channels with 2, 3, or 4 Talkers**	Each channel features independent polar pattern control. Select each polar pattern setting based on the number of talkers in each pickup area and the table size or shape.	Maximum noise rejection and channel separation are desired, and when the seating configuration is unlikely to change. This configuration is optimal for use with automixing.

Identify Channels

Identify a channel on the microphone by flashing the corresponding LED. This quickly verifies that you are making changes to the correct channel.

- **Designer:** `[Your room]` > `MXA310` > `Coverage` > `Select channel` > `Properties` > `Identify channel`
- **Web application:** `Coverage` > `Select channel` > `Identify channel`

Parametric Equalizer

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

Common equalizer applications:

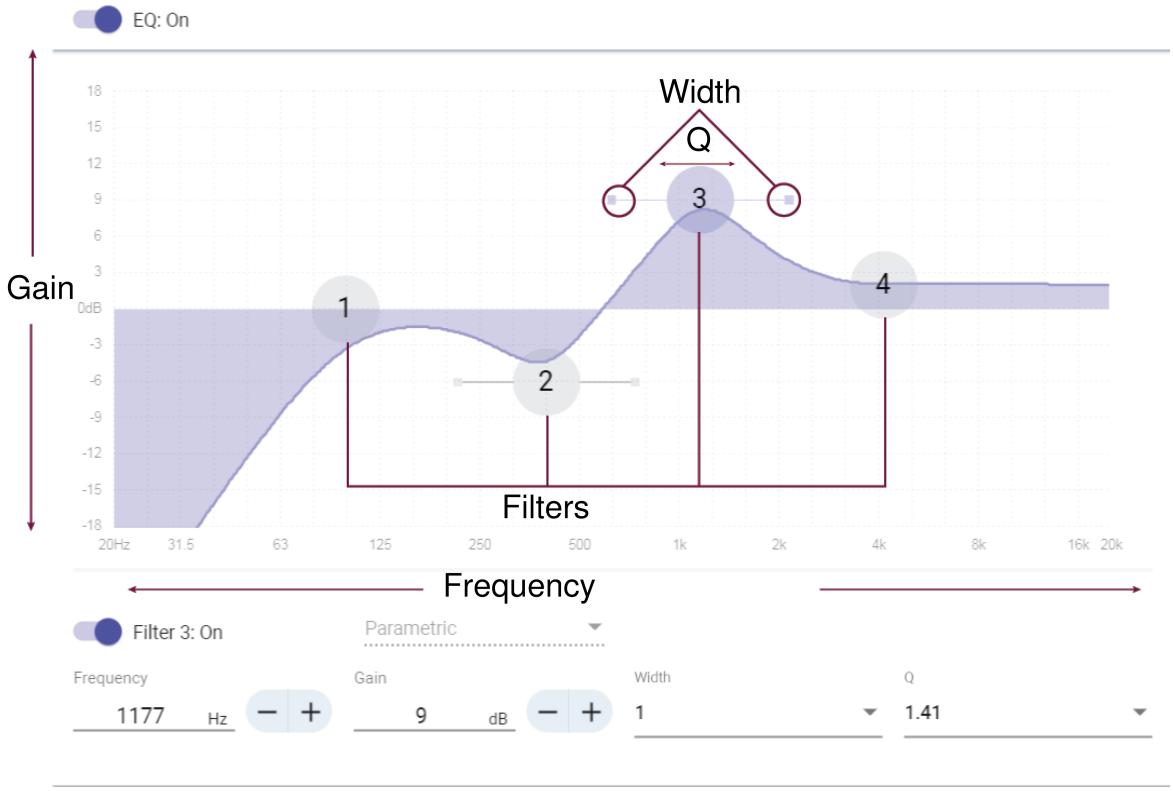
- Improve speech intelligibility
- Reduce noise from HVAC systems or video projectors
- Reduce room irregularities
- Adjust frequency response for reinforcement systems

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

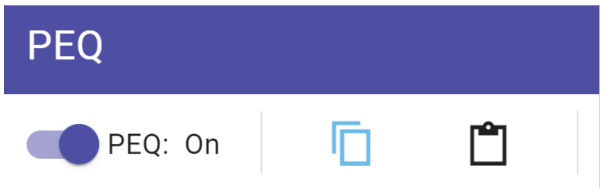
Setting	Function
Filter Type	Only the first and last band have selectable filter types. **Parametric:** Attenuates or boosts the signal within a customizable frequency range **Low Cut:** Rolls off the audio signal below the selected frequency **Low Shelf:** Attenuates or boosts the audio signal below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



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
Reduce flutter echoes and sibilance	Identify the specific frequency range that "excites" the room: 1. Set a narrow Q value. 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. 3. Reduce the gain at the identified frequency (start between −3 and −6 dB) to minimize the unwanted room sound.
Reduce hollow, resonant room sound	Identify the specific frequency range that "excites" the room: 1. Set a narrow Q value. 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. 3. Reduce the gain at the identified frequency (start between −3 and −6 dB) to minimize the unwanted room sound.

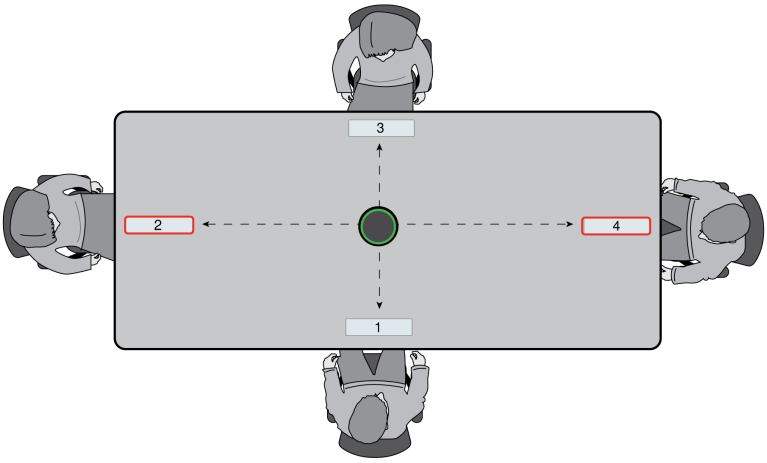
EQ Contour

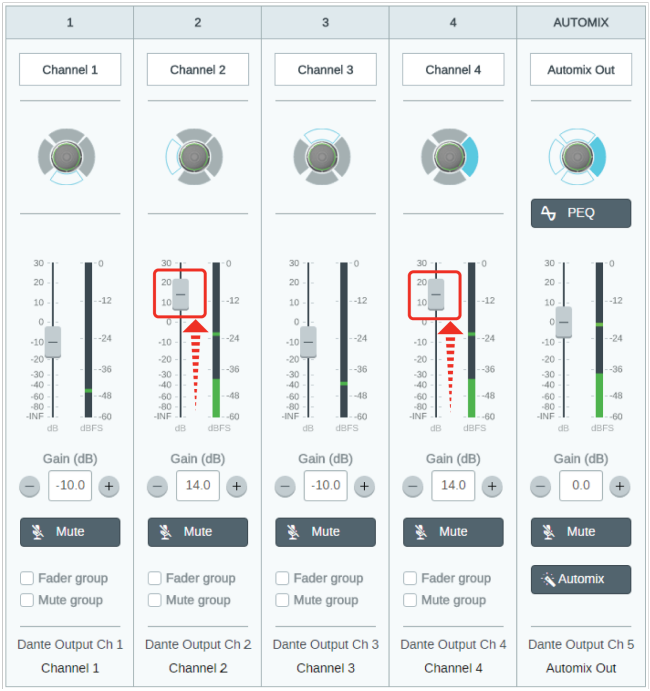
The MXA310's EQ contour is a low-cut filter that rolls off low frequencies to reduce unwanted noise from sources like table vibrations, HVAC systems, and other environmental noise.

To turn on, select the EQ contour button in Designer or the Low-Cut Filter button in the web application.

Adjust Levels

Each of the 4 microphone channels has independent gain control. This feature is useful when people are seated at unequal distances from the microphone.





When the microphone is centered on a rectangular table, use the channel gain to balance the levels and compensate for the unequal distances.

For best results, adjust the channel gain faders before making changes to the automix gain faders.

To adjust:

1. Talk in each channel's coverage area at a typical speech volume. Adjust the faders so the meters are peaking at approximately −20 dBFS.
2. Adjust the equalizer settings to optimize speech intelligibility and minimize noise (such as low-frequency rumble caused by HVAC systems).
3. If equalizer settings cause a significant increase or decrease in levels, make any necessary level adjustments according to step 1.

When to Use the Channel and Automix Gain Faders

There are 2 different gain faders that serve different purposes:

Channel Gain (Pre-Gate): `MXA310` > `Channels`

These faders affect a channel's gain before it reaches the automixer and therefore affect the automixer's gating decision. Boosting the gain here will make the lobe more sensitive to sound sources and more likely to gate on. Lowering gain here makes the lobe less sensitive and less likely to gate on. If you're only using direct outputs for each channel without the automixer, you only need to use these faders.

Automix Gain (Post-Gate): `MXA310` > `Automixer`

These faders adjust a channel's gain after the lobe has gated on. Adjusting the gain here does not affect the automixer's gating decision. Only use these faders to adjust the gain of a talker after you are satisfied with the automixer's gating behavior.

Note: The level meters in the Automixer tab only display pre-gate channel gain, but the faders adjust post-gate channel gain.

Automix Channel

This channel automatically mixes the audio from all channels to deliver a convenient, single output. The automix channel must be routed in Dante Controller to the desired output.

Note: Automix is disabled when using the toroid polar pattern. Inversely, the toroid pattern cannot be selected when automix is enabled.

To enable automixing and modify settings:

1. Select Configuration
2. Open the AUTOMIX tab
3. Check the Enable box

To modify settings from the channels screen:

1. Select Channels
2. In the AUTOMIX channel, select the AUTOMIX button

Automix Settings

Leave Last Mic On	Keeps the most recently used microphone channel active. The purpose of this feature is to keep natural room sound in the signal so that meeting participants on the far end know the audio signal has not been interrupted.
Gating Sensitivity	Changes the threshold of the level at which the gate is opened
Off Attenuation	Sets the level of signal reduction when a channel is not active
Hold Time	Sets the duration for which the channel remains open after the level drops below the gate threshold
Maximum Open Channels	Sets the maximum number of simultaneously active channels
Priority	When selected, this channel gate activates regardless of the number of maximum open channels.

Automix Gain Meter	When enabled, changes gain meters to display automix gating in real time. Channels that gate open will display more gain than channels that are closed (attenuated) in the mix.

Automix Modes

Classic

Classic mode emulates the Shure SCM820 automixer (in its default settings). It is renowned for fast-acting, seamless channel gating and consistent perceived ambient sound levels. Off-attenuation in this mode is fixed at -12 dB per channel, regardless of the number of open channels.

Smooth

In Smooth mode, Off-attenuation settings for each channel are scaled, depending on the number of open channels. The scaled gain structure helps to reduce noise when there is a high channel count. When fewer channels are used, the lower off-attenuation provides transparent gating.

Number of channels enabled	Off-attenuation (dB)
2	-3.0
3	-4.8
4	-6

Custom

Custom mode provides control over all automixing parameters. This mode is useful when adjustments must be made to one of the preset modes to fit a particular application. If parameters are changed in smooth or classic mode, custom mode automatically activates.

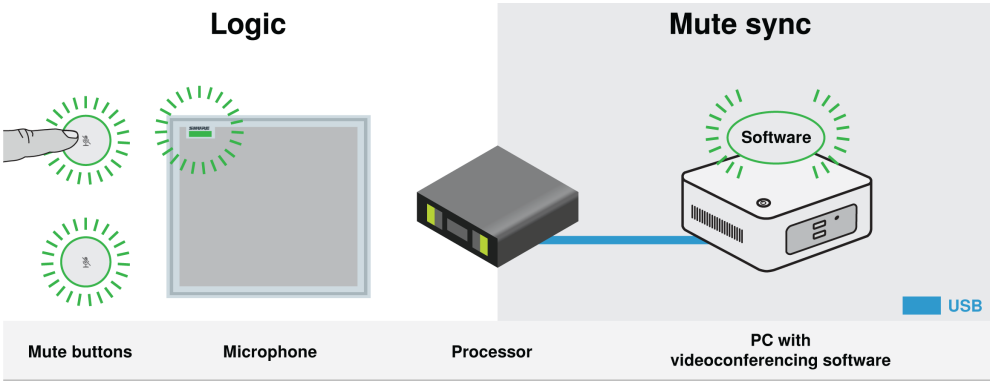
Manual

Manual mode sums all active tracks and sends the summed signal over a single Dante output. This provides the option to route the signal for reinforcement or recording, without enabling automixing. The settings from the faders in the standard monitoring view apply to the summed output.

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.

Security

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. Shure devices that support encryption require a password to make a connection. Encryption is not supported with third-party devices.

In Designer, you can turn on encryption for all devices in a room: `[Your room]` > `Settings` > `Audio encryption`.

To activate encryption in the web application, go to `Settings` > `Audio encryption` > `Enable encryption`.

Important: For encryption to work:

- All Shure devices on your network must use encryption.
- Disable AES67 in Dante Controller. AES67 and AES-256 cannot be used at the same time.

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 NIC to connect to the network. The audio NIC 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. Set a device password if desired.
3. Double-click the device and go to `Settings` > `Network` > `802.1X`.
4. Choose your EAP method from the menu.
5. Enter any required credentials and load any necessary certificates.
6. Press Save to save the 802.1X settings to the device.
7. 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.

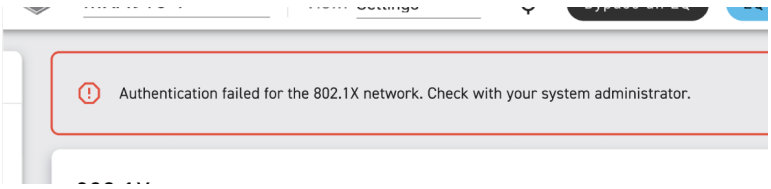
To change device settings:

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

Networking Best Practices

When connecting Shure devices to a network, use the following best practices:

- Always use a "star" network topology by connecting each device directly to the switch or router.
- Connect all Shure networked devices to the **same network** and set to the **same subnet**.
- Allow all Shure software through the firewall on your computer.
- Use only 1 DHCP server per network. Disable DHCP addressing on additional servers.
- Power on the switch and DHCP server before powering on the Shure devices.
- To expand the network, use multiple switches in a star topology.
- All devices must be at the same firmware revision level.

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.

Device IP Configuration

This Shure device uses 2 IP addresses: one for Shure control, and one for Dante audio and control. For most installations, the Shure control and Dante audio IP addresses should be in the same subnet range.

- **Shure control**
  - Carries data for Shure control software, firmware updates, and third-party control systems (such as AMX or Crestron)
- **Dante audio and control**
  - Carries Dante digital audio and control data for Dante Controller
  - Requires a wired, gigabit Ethernet connection to operate

To access these settings in Designer, go to `[Your device]` > `Settings` > `IP configuration`.

Note: Refer to our FAQ if you're using Shure profiles on NETGEAR M4250-series switches.

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
1 ms	10
2 ms	10+

QoS (Quality of Service) Settings

QoS settings assign priorities to specific data packets on the network, ensuring reliable audio delivery on larger networks with heavy traffic. This feature is available on most managed network switches. Although not required, assigning QoS settings is recommended.

Note: Coordinate changes with the network administrator to avoid disrupting service.

To assign QoS values, open the switch interface and use the following table to assign Dante®-associated queue values.

- Assign the highest possible value (shown as 4 in this example) for time-critical PTP events
- Use descending priority values for each remaining packet.

Dante QoS Priority Values

Priority	Usage	DSCP Label	Hex	Decimal	Binary
High (4)	Time-critical PTP events	CS7	0x38	56	111000
Medium (3)	Audio, PTP	EF	0x2E	46	101110
Low (2)	(reserved)	CS1	0x08	8	001000
None (1)	Other traffic	BestEffort	0x00	0	000000

Note: Switch management may vary by manufacturer and switch type. Consult the manufacturer's product guide for specific configuration details.

For more information on Dante requirements and networking, visit www.audinate.com.

Networking Terminology

PTP (Precision Time Protocol): Used to synchronize clocks on the network
DSCP (Differentiated Services Code Point): Standardized identification method for data used in layer 3 QoS prioritization

Ports, Protocols, and Firewall Rules

For information about IP ports and protocols or firewall rules, go to:

- IP Ports and Protocols for Shure Devices
- Firewall Rules for Shure Software Applications

Digital Audio Networking

Dante digital audio is carried over standard Ethernet and operates using standard internet protocols. Dante provides low latency, tight clock synchronization, and high Quality-of-Service (QoS) to provide reliable audio transport to a variety of Dante devices. Dante audio can coexist safely on the same network as IT and control data, or can be configured to use a dedicated network.

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.

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
Brooklyn II	ULX-D, SCM820, MXWAPT, MXWANI, P300, MXCWAPT	32	32
Brooklyn II (without SRAM)	MXA920, MXA910, MXA902, MXA710, AD4, AD600, APXD2	16	16
IP Core	MXA920-V3, MXA902-V3, MXA901	32	32
Ultimo/UltimoX	MXA310, ANI4IN, ANI4OUT, ANIUSB-MATRIX, ANI22, MXN5-C	2	2
DEP	ANIUSB-MATRIX-V3	2	2
DAL	IntelliMix Room	16	16

Learn more about Dante flows in our FAQs or from Audinate.

AES67

AES67 is a networked audio standard that enables communication between hardware components which use different IP audio technologies. This Shure device supports AES67 for increased compatibility within networked systems for live sound, integrated installations, and broadcast applications.

The following information is critical when transmitting or receiving AES67 signals:

- Update Dante Controller software to the newest available version to ensure the AES67 configuration tab appears.
- Before turning encryption on or off, you must disable AES67 in Dante Controller.
- AES67 cannot operate when the transmit and receive devices both support Dante.

Shure Device Supports:	Device 2 Supports:	AES67 Compatibility
Dante and AES67	Dante and AES67	No. Must use Dante.

Shure Device Supports:	Device 2 Supports:	AES67 Compatibility
Dante and AES67	AES67 without Dante. Any other audio networking protocol is acceptable.	Yes

Separate Dante and AES67 flows can operate simultaneously. The total number of flows is determined by the maximum flow limit of the device.

Sending Audio from a Shure Device

All AES67 configuration is managed in Dante Controller software. For more information, refer to the Dante Controller user guide.

1. Open the Shure transmitting device in Dante Controller.
2. Enable AES67.
3. Reboot the Shure device.
4. Create AES67 flows according to the instructions in the Dante Controller user guide.

Receiving Audio from a Device Using a Different Audio Network Protocol

Third-party devices: When the hardware supports SAP, flows are identified in the routing software that the device uses. Otherwise, to receive an AES67 flow, the AES67 session ID and IP address are required.

Shure devices: The transmitting device must support SAP. In Dante Controller, a transmit device (appears as an IP address) can be routed like any other Dante device.

Use 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/MXA310.

Troubleshooting

Problem	Solution
Software lags in Google Chrome browser	Problem is browser-related. Turn off hardware acceleration option in Chrome.
Sound quality is muffled or hollow	Check that channels have been aimed to the desired area. Make sure channels are not accidentally muted.

Problem	Solution
	Use equalizer to adjust frequency response on a single channel or on the automix channel. See the equalizer applications for the appropriate use.
Microphone does not show up in device discovery	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 if necessary
Audio is not present or is quiet/distorted	Check cables Verify that channels are not muted Make sure channels are aimed in the right direction, with the intended polar pattern. Check that fader levels are not set too low If using automixing, check the settings to ensure channels are gating on/off properly
No lights	Check if No Lights Mode is enabled, or if any Light Ring settings are turned off.
Automixing is disabled or is missing a channel	Automix is automatically disabled when you turn on toroid Omnidirectional channels are not sent to the automix channel
Microphone does not power on	The network switch must supply Power over Ethernet. Otherwise, a PoE injector must be used Check network cables and connections

Specifications

All specifications measured from cardioid polar pattern. Values for all patterns are within ± 3 dB of these specifications unless otherwise noted.

General

Polar Pattern

All channels independently adjustable

Cardioid, hypercardioid, supercardioid, toroid, omnidirectional, bidirectional

Connector Type
RJ45

Power Requirements
Power over Ethernet (PoE), Class 0

Power Consumption
4W, maximum

Weight
362 g (0.8 lbs)

Dimensions
H x W x D

3.6 x 13.4 x 13.4 cm (1.4 x 5.3 x 5.3 in.)

Control Software
Shure Designer or web application

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)

Audio

Microphone Elements
4 EMC

Frequency Response
100 to 20,000 Hz

AES67 or Dante Digital Output

Channel Count	5 total channels (4 independent transmit channels, 1 automix output)
Sampling Rate	48 kHz
Bit Depth	24

Sensitivity
at 1 kHz, , −15 dB Gain Setting

−21 dBFS/Pa

Maximum SPL
1 kHz at 1% THD, −15 dB Gain Setting

115.2 dB SPL

Signal-to-Noise Ratio
Ref. 94 dBSPL at 1 kHz, −15 dB Gain Setting

Cardioid	75 dB
Toroid	67 dB

Latency

Does not include Dante latency

<1 ms

Self Noise

−15 dB Gain Setting

Cardioid	19.2 dB SPL-A
Toroid	26.8 dB SPL-A

Dynamic Range

−15 dB Gain Setting

Cardioid	96 dB
Toroid	90 dB SPL

Built-in Digital Signal Processing

Per Channel	Equalizer (4-band parametric), mute, gain (140 dB range)
System	Automatic mixing, low-cut filter (−12 dB/octave @ 150 Hz)

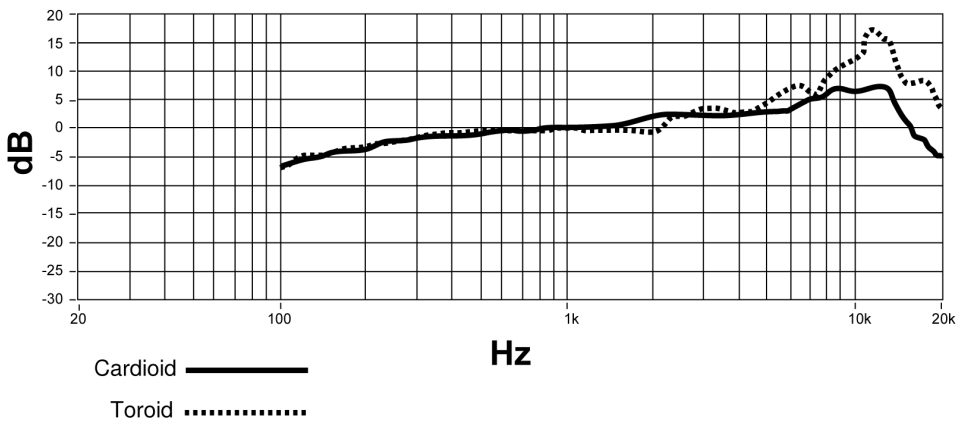
Networking

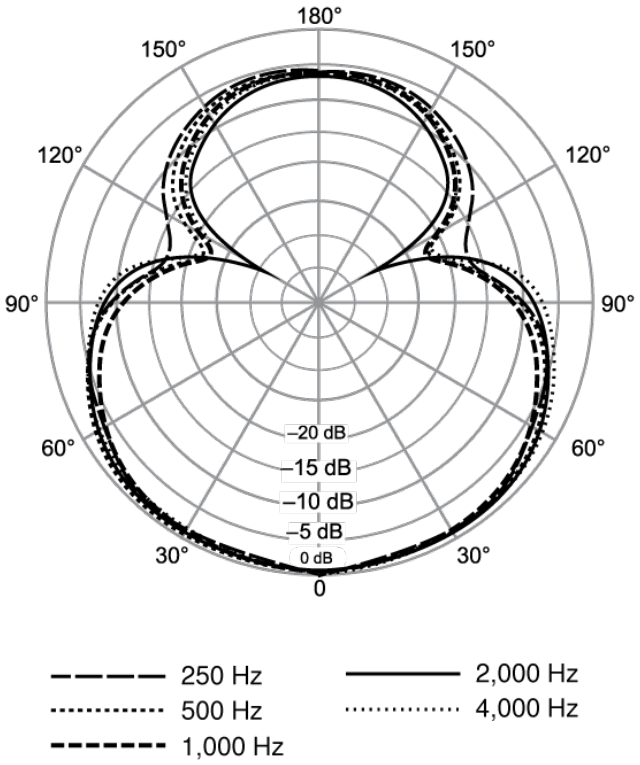
Cable Requirements

Cat 5e or higher (shielded cable recommended)

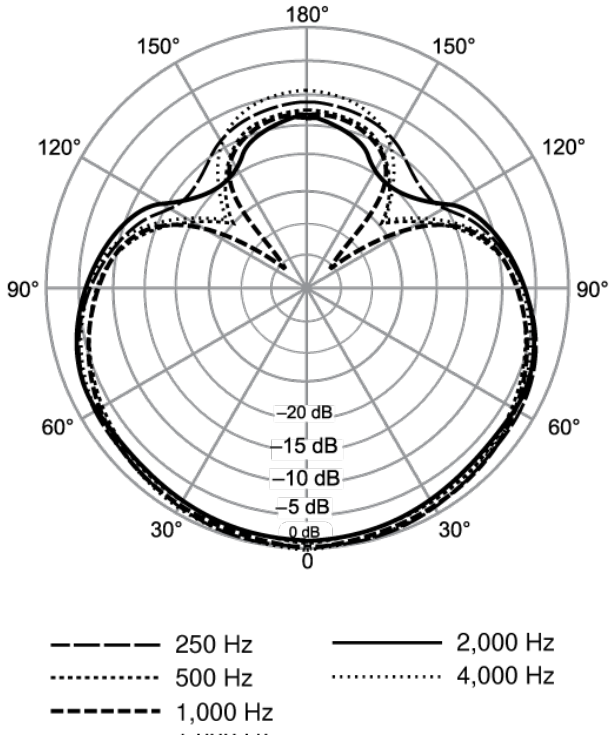
Frequency Response

Frequency response measured from a distance of 2 feet (61 cm).

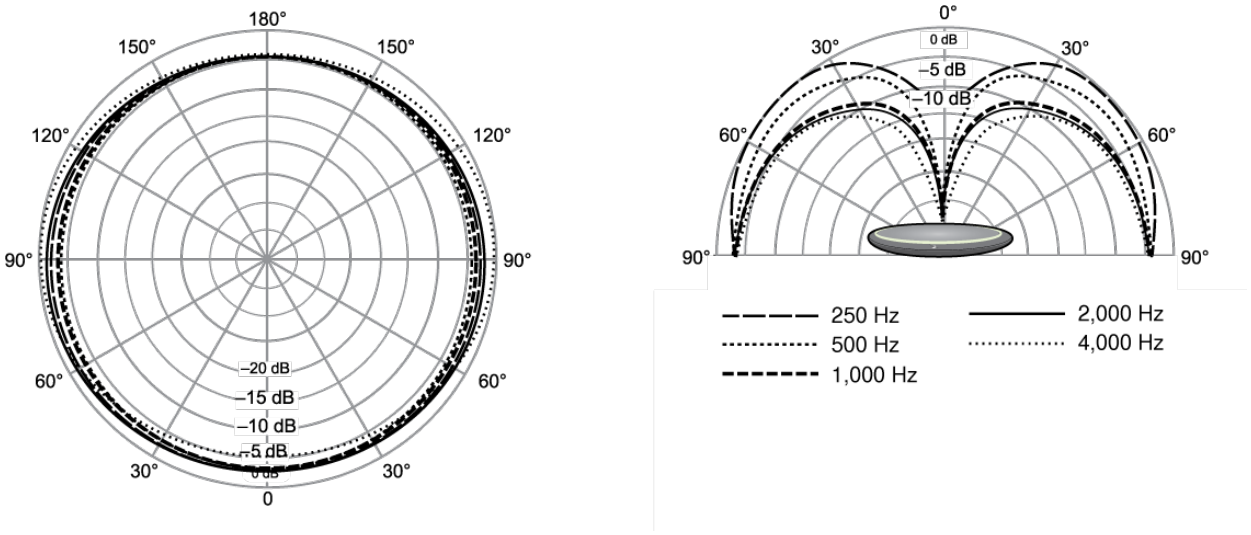




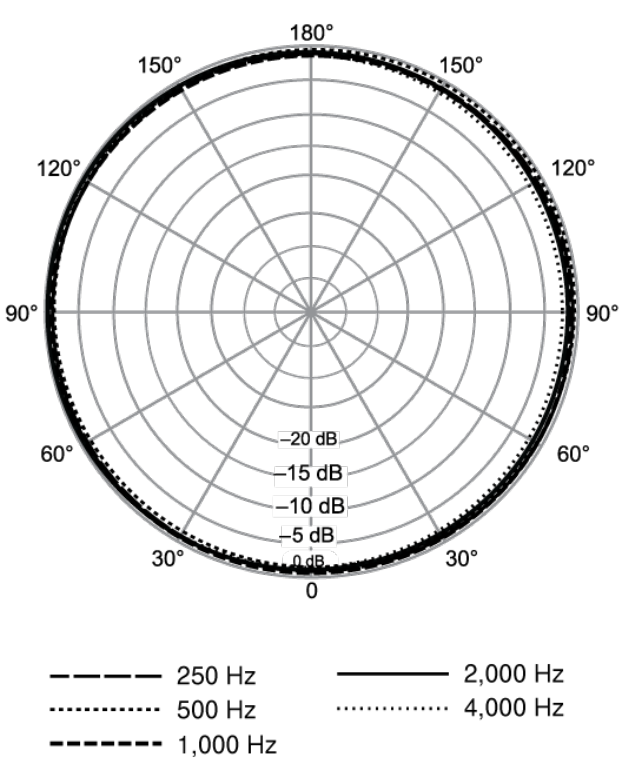
Hypercardioid



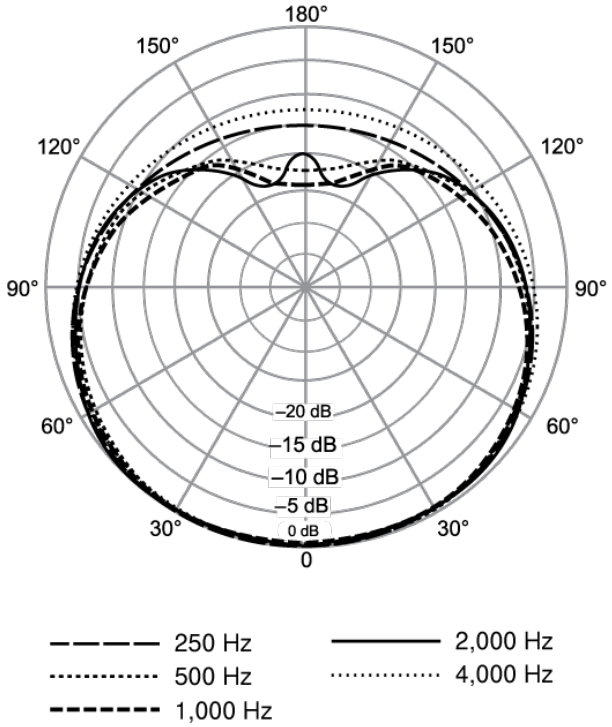
Supercardioid



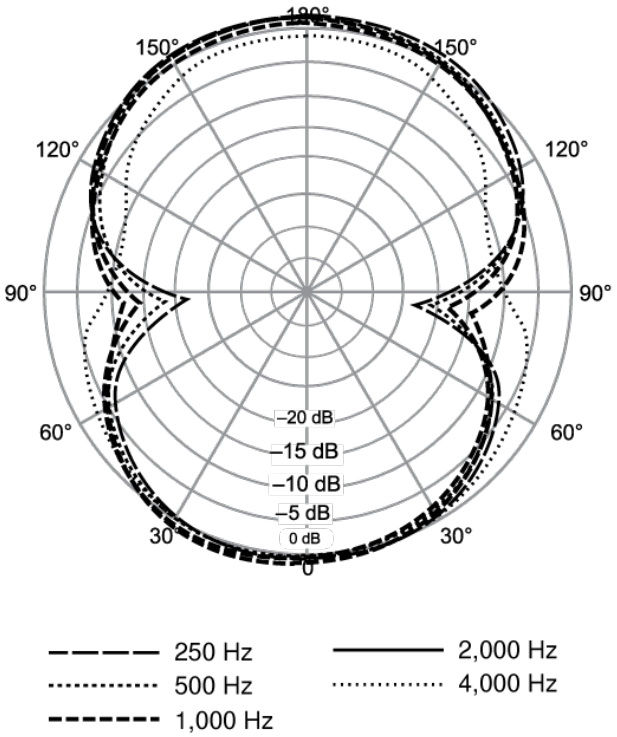
Toroid



Omnidirectional



Cardioid



Bidirectional

Optional Accessories

Flush mounting tray kit (aluminum)	A310AL-FM
Flush mounting tray kit (black)	A310B-FM

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

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
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