

MX396 -- Multi-Element Boundary Microphone

General Description

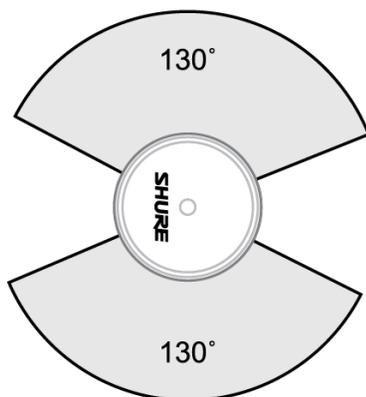
Shure MX396 Dual-Element and Tri-Element microphones provide full coverage of large tables with fewer microphones, and feature a low profile design. This makes them ideal for use in boardrooms and other installations where aesthetics are important.

Features

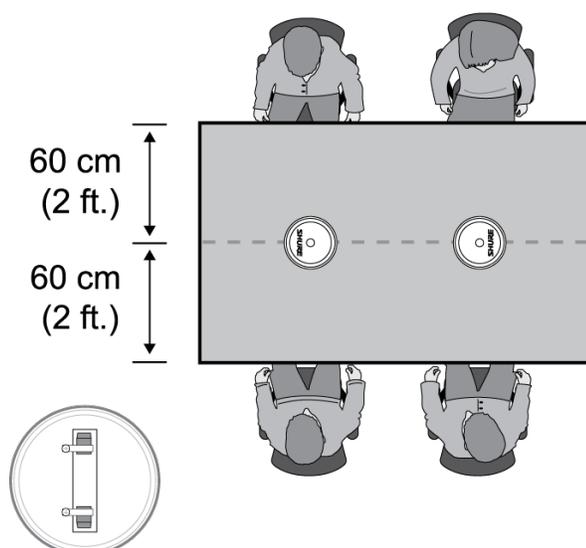
- Low profile, aesthetic design
- Wide dynamic range and smooth frequency response
- Configurable mute switch with logic output
- Logic input for external LED control
- RF filtering with CommShield® technology

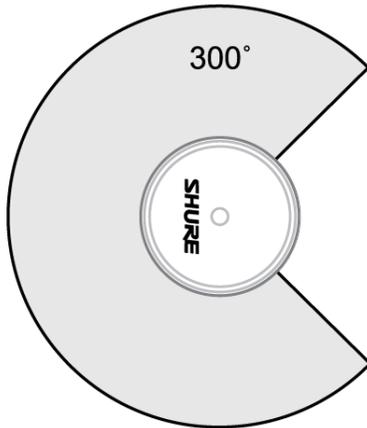
Placement

Important: Align the Shure logo as shown for proper coverage.

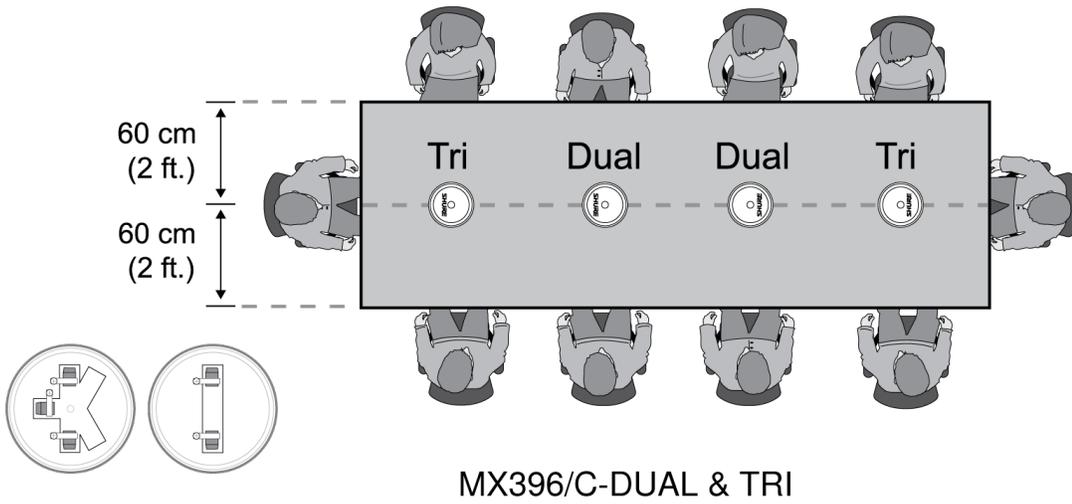
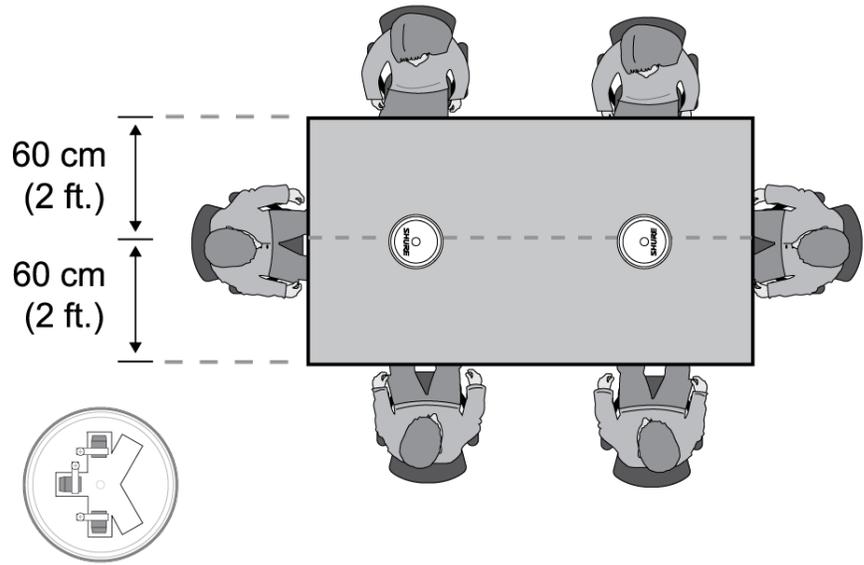


MX396/C-DUAL
2 x 130° @ -3 dB

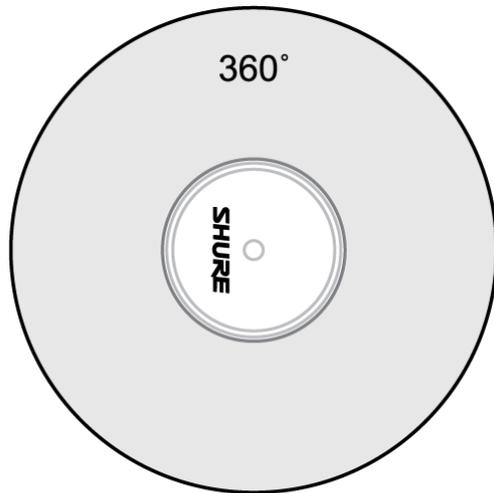




MX396/C-TRI
300° @ -3 dB

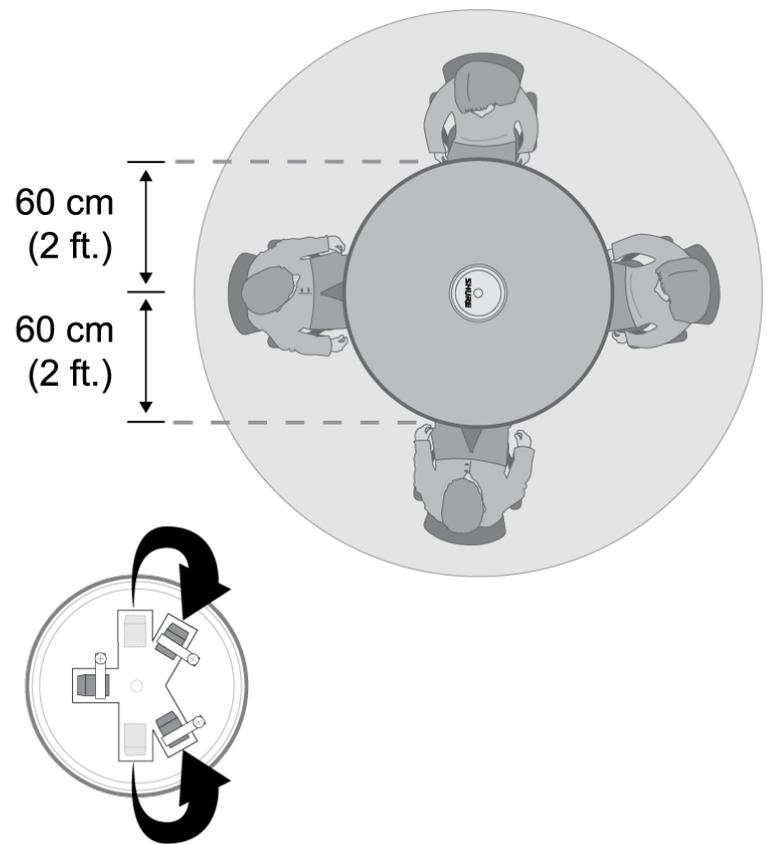


MX396/C-DUAL & TRI



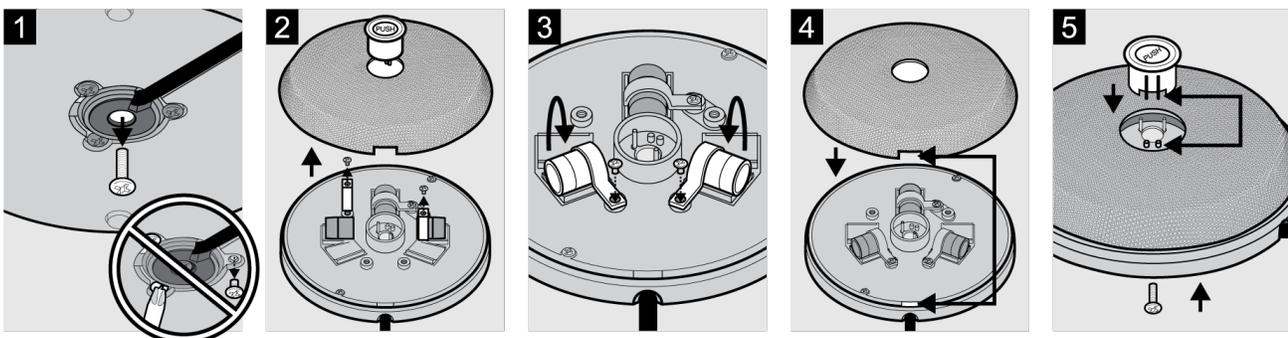
MX396/C-TRI

360°

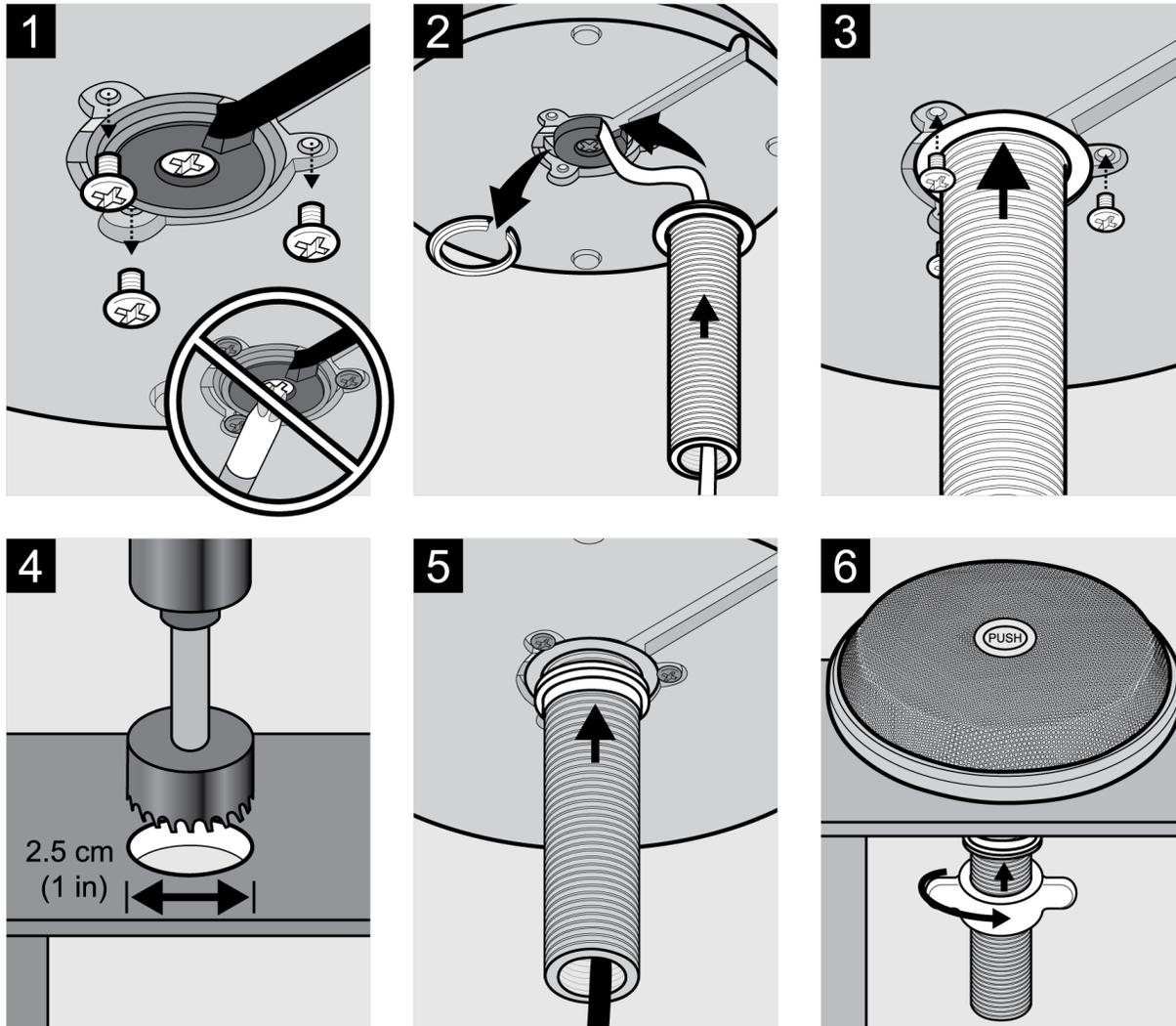


Reconfiguring the MX396-TRI for 360° Coverage

To configure the MX396 for 360° "omnidirectional" coverage, open the grille and reposition the internal mic elements as shown.



Permanent Installation



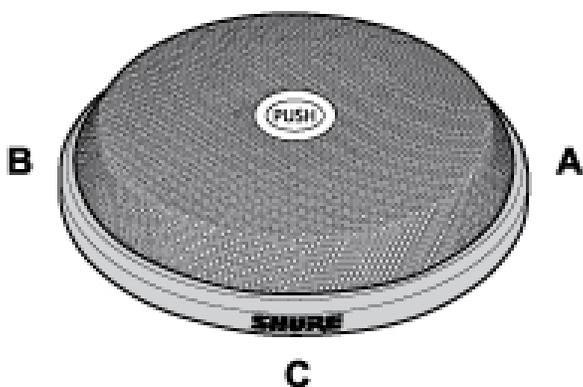
Note: Overtightening the wing nut reduces shock isolation.

Cable

The MX396 comes with a 20 ft. attached, unterminated cable.

Wire Color	Function	Mic Element
White	Mic 1 Audio +	A
Green	Mic 1 Audio -	
Orange	Mic 2 Audio +	B
Blue	Mic 2 Audio -	

Wire Color	Function	Mic Element
Yellow	Mic 3 Audio +	C (TRI models)
Gray	Mic 3 Audio -	
Red	SWITCH OUT	All
Black	LED IN	
Silver (non-insulated)	Logic Ground	
Shield	Mic Common Ground	



Phantom Power

Each element in the microphone requires 12 to 48 V phantom power. The LED also uses phantom power, and dims slightly when phantom power voltage drops below 48 V DC.

The Tri-element model draws 22 mA at 48 V. The Dual-element model draws 19 mA at 48 Vdc. (Each element draws 3 mA and the LED draws 13 mA, distributed equally among each element.)

NOTE: Do not connect multiple elements in parallel to a single mic input. The phantom power current draw could exceed the maximum allowable for one mic input.

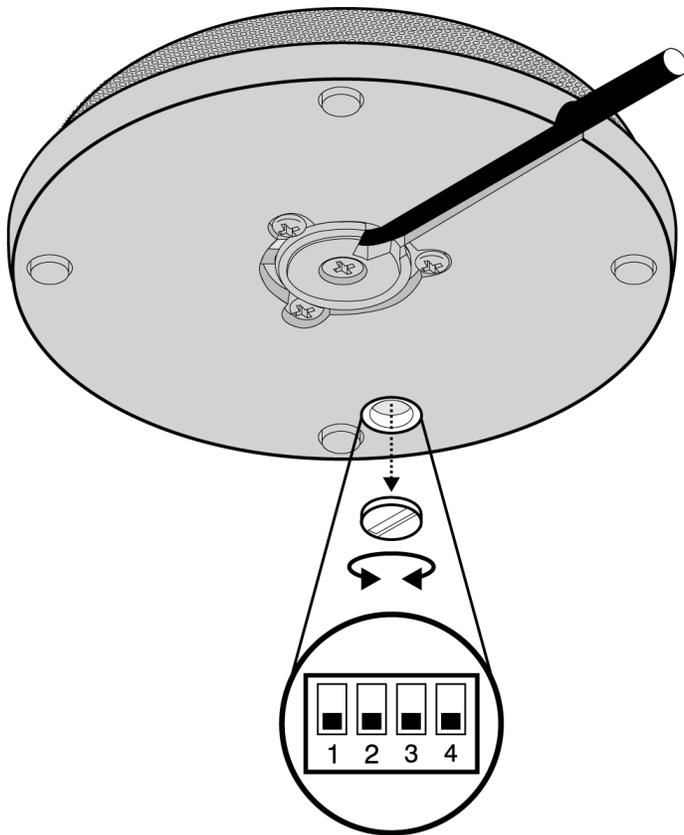
Accessing the DIP Switches

Caution: Failure to reinstall the setscrew will reduce RF immunity.

DIP Switch Settings

DOWN (Default)	UP
Momentary	Toggle

DOWN (Default)	UP
Push-to-Mute	Push-to-Talk
Mute button enabled, LED illuminates when mic is active	Disable mute button (microphone always on), logic controls LED
Full Frequency Range	6dB/octave Low Cut Filter



Low Cut Filter

Set **DIP Switch 4 up** to activate the low cut filter. Attenuates 6 dB per octave below 150 Hz.

Local Mute Control

The microphone ships configured for local (manual) mute control (**DIP Switch 3 down**). In this mode, the PUSH button on the microphone mutes the audio signal at the microphone. Audio is not sent to the audio outputs.

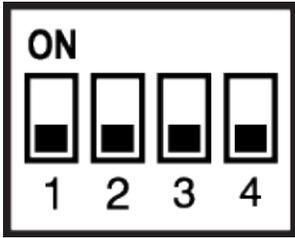
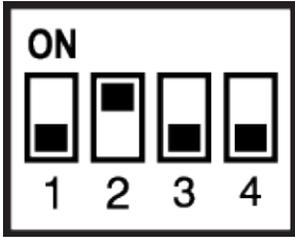
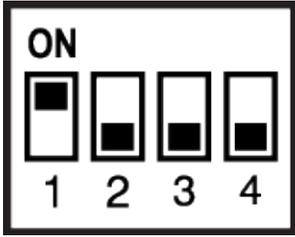
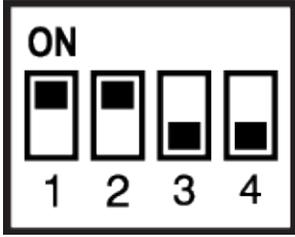
In this configuration, the LED color reflects the microphone state, as controlled by the user with the PUSH button.

Green: microphone active

Red: microphone muted

Button Configuration

For local mute control operation, use DIP Switches 1 and 2 to configure the button behavior.

Button Behavior	SWITCH OUT Logic Signal	DIP Switch Setting
Momentary: push-to-mute (as shipped).	When pushed, SWITCH OUT (red wire) falls to 0 V. When released, SWITCH OUT returns to +5 V.	
Momentary: push-to-talk		
Toggle: Push and release to toggle the microphone on or off. Mic is active when powered on.	Push and release sets SWITCH OUT to 0 V. Push again to toggle back to +5 V.	
Toggle: Push and release to toggle the microphone on or off. Mic is mute when powered on		

Logic Mute Control (Automatic Mixing)

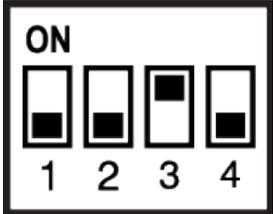
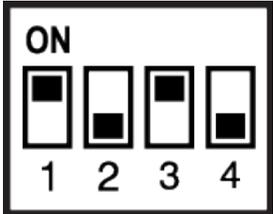
Set **DIP Switch 3 up** to configure the microphone for logic control applications where audio from the microphone is muted by an external device, such as an automatic mixer. In this mode, the local mute function of the PUSH button is bypassed (the microphone always sends audio) and the LED does not respond directly from pushing the button.

As required by the installation specifications, wire the SWITCH OUT conductor in the microphone cable to the automatic mixer or other TTL logic device. When the talker presses the button on the microphone, it changes the voltage level at the SWITCH OUT conductor, which signals the device to mute audio for that channel or perform some other function.

To control the LED on the microphone, wire the LED IN conductor to the gate output on the automatic mixer (or any TTL logic device).

Button Configuration

For logic control operation, DIP Switch 1 determines the button behavior (DIP Switch 2 has no effect).

Button Behavior	DIP Switch Setting
<p>Momentary: When pushed, SWITCH OUT (red wire) falls to 0 V. When released, SWITCH OUT returns to +5 V.</p>	
<p>Toggle: Push and release sets SWITCH OUT to 0 V. Push again to toggle back to +5 V.</p>	

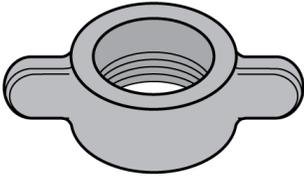
Controlling the LED Using Logic LED IN

When configured for logic mute control, connect the LED IN conductors to an external switch, relay, or a TTL gate (gate out) on an automatic mixer.

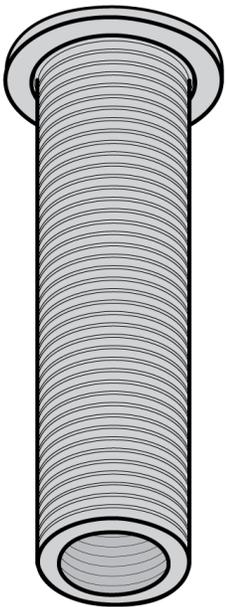
- The LED illuminates **green** when the MX396 LED IN is **grounded** (black wire connected to the bare silver wire).
- The LED illuminates **red** when LED IN is **lifted** (black wire is NOT connected to the bare silver wire).

Accessories

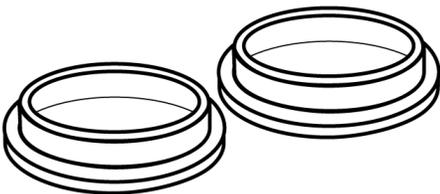
Replacement Parts



Fastening Wing Nut [65A2190]



Mounting Tube [31A2165]



Rubber Isolation Rings (2) [66A405]



Mic Cartridge (Cardioid) [R185B]

Specifications

All measurements taken with microphone mounted on a wooden surface (76 x 76 cm)

Cartridge Type

Electret Condenser

Frequency Response

50–17000 Hz

Polar Pattern

MX396/C-DUAL	Cardioid (x2)
MX396/C-TRI	Cardioid (x3)

Output Impedance

170 Ω

Output Configuration

Active Balanced

Sensitivity

@ 1 kHz, open circuit voltage

–35 dBV/Pa (18 mV)

1 Pa=94 dB SPL

Maximum SPL

1 kHz at 1% THD, 1 k Ω load

122 dB

Equivalent Output Noise

A-weighted

30 dB SPL

Signal-to-Noise Ratio

Ref. 94 dB SPL at 1 kHz

64 dB

Dynamic Range1 k Ω load, @ 1 kHz

92 dB

Common Mode Rejection

10 to 100,000 kHz

45 dB, minimum

Preamplifier Output Clipping Level

at 1% THD

-7 dBV (0.5 V)

Mute Switch

-50 dB minimum

Logic Connections

LED IN	Active low ($\leq 1.0\text{V}$), TTL compatible. Absolute maximum voltage: -0.7V to 50V.
LOGIC-OUT	Active low ($\leq 0.5\text{V}$), sinks up to 20mA, TTL compatible. Absolute maximum voltage: -0.7V to 24V (up to 50V through 3k Ω).

Cable

6.1 m (20 ft), attached, unterminated, three shielded audio pairs and three shielded conductors for logic control

Net Weight

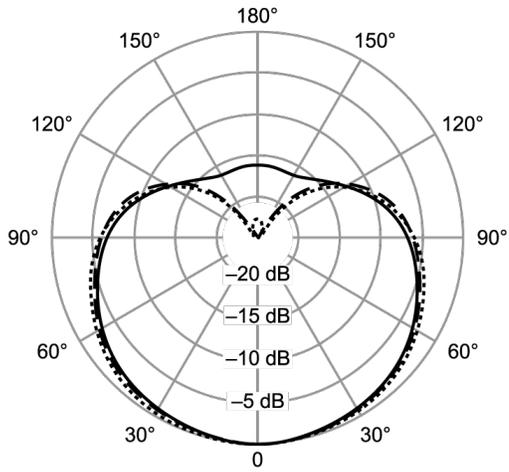
594 g (1.3 lbs)

Environmental Conditions

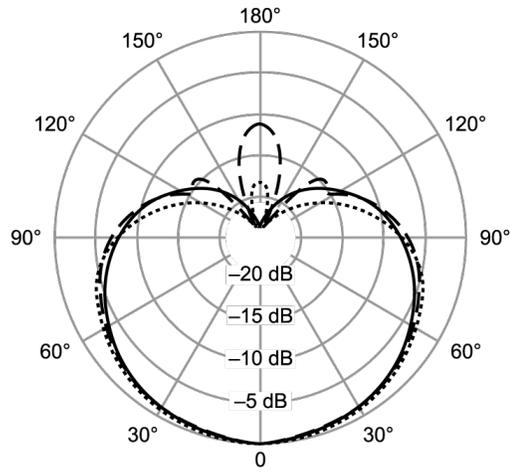
Operating Temperature	-18–57°C (0–135°F)
Storage Temperature	-29–74°C (-20–165°F)
Relative Humidity	0–95%

Power Requirements

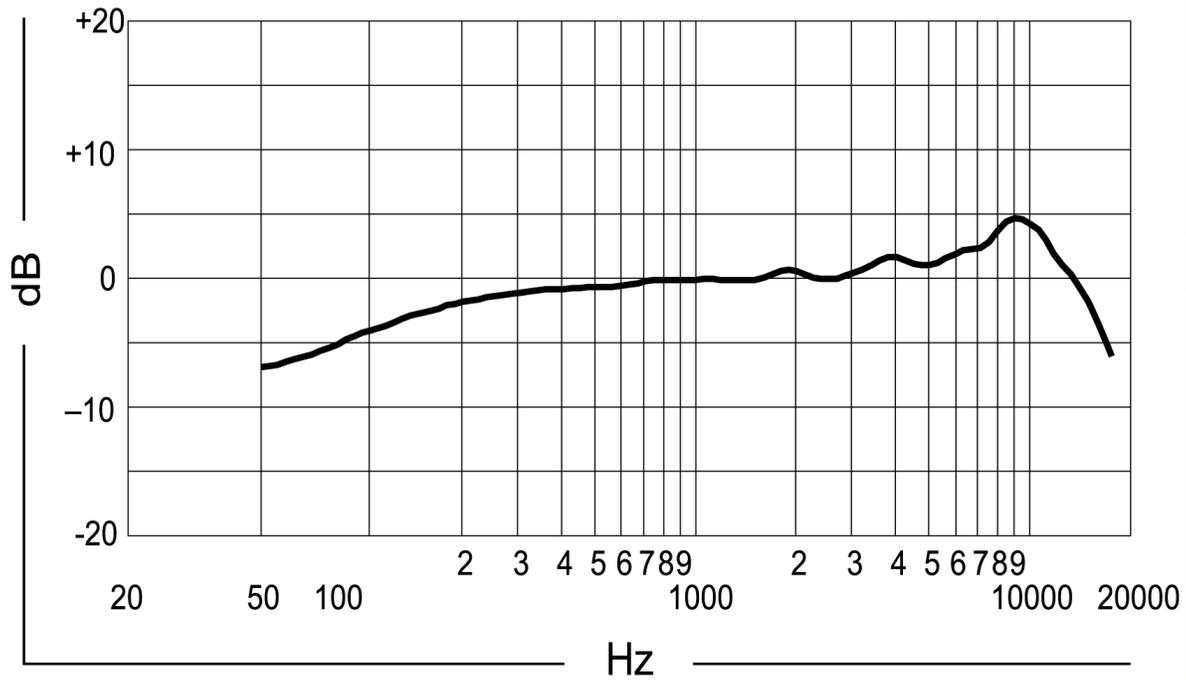
MX396/C-DUAL	48–52 V DC, 19.0 mA
MX396/C-TRI	48–52 V DC, 22.0 mA

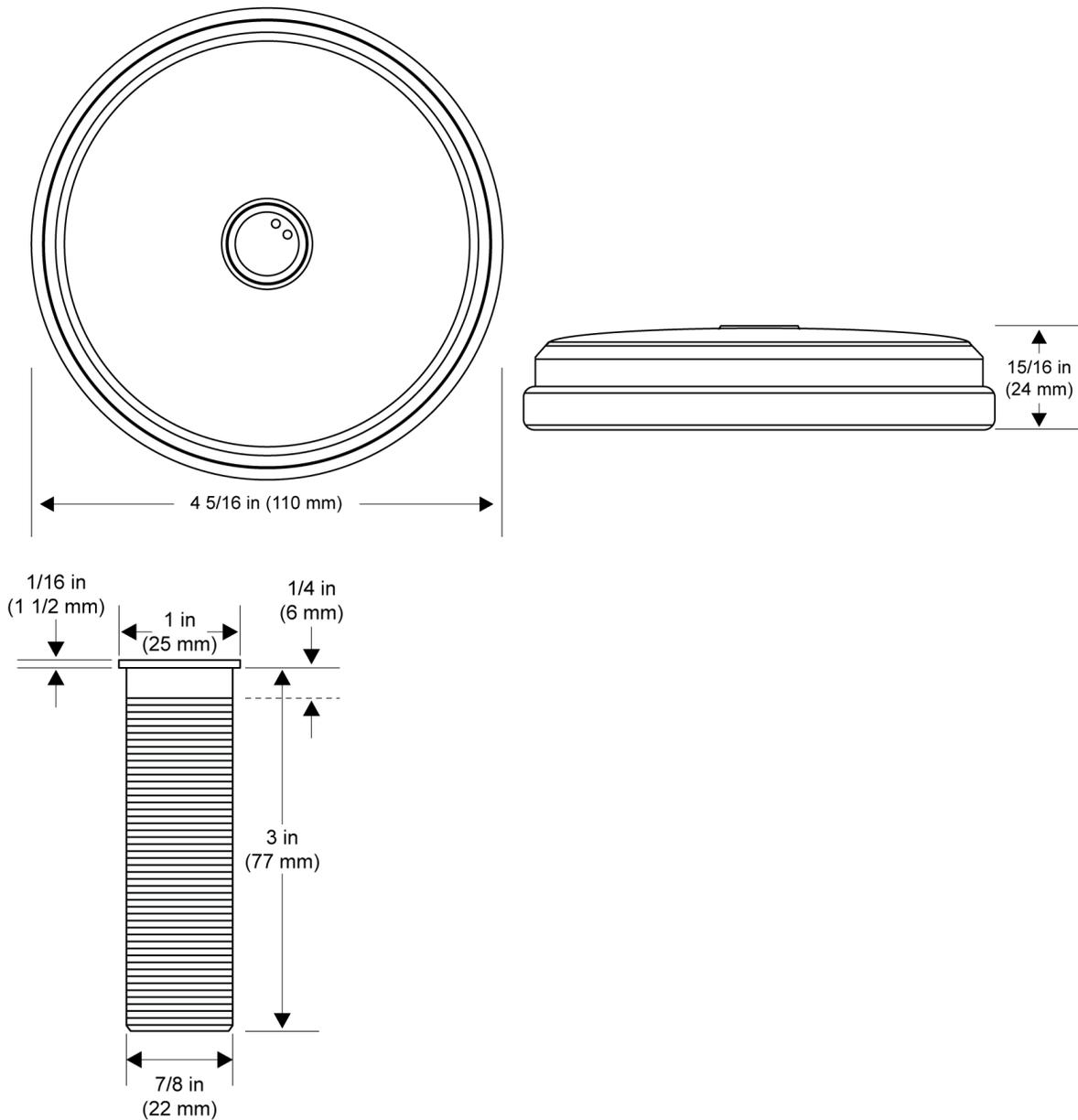


— 250 Hz
- - - 500 Hz
- - - 1000 Hz



— 2500 Hz
- - - 6400 Hz
- - - 10000 Hz





31A2165
Mounting Tube

Certifications

Meets essential requirements of all applicable European Directives.

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

The CE Declaration of Conformity can be obtained from: www.shure.com/europe/compliance

Authorized European representative:

Shure Europe GmbH

Headquarters Europe, Middle East & Africa

Department: EMEA Approval

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