

iSpeaker CM360

Dante Ceiling Microphone

Hardware User Manual V1.0

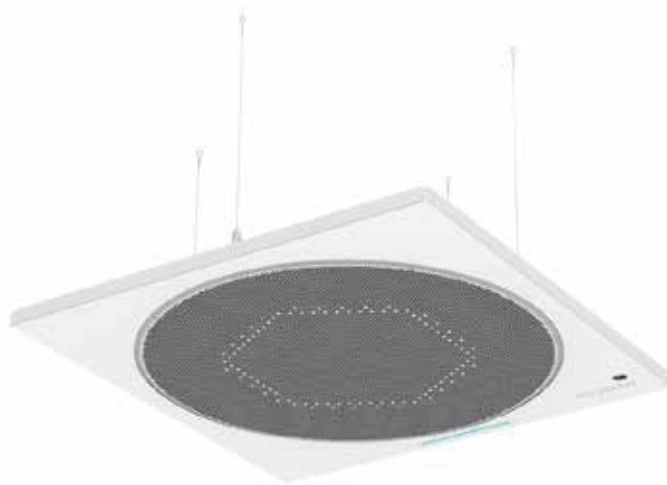


Table of Contents

1. SAFETY PRECAUTIONS	3
2. PACKAGING LIST.....	4
3. PRODUCT OVERVIEW	5
3.1 FEATURES	5
3.1.1 HARDWARE FEATURES.....	5
3.1.2 SOFTWARE FEATURES	6
3.1.3 MOUNTING FEATURES.....	7
3.2 FRONT & SIDE	7
3.3 BACK SIDE	8
3.4 IR REMOTE.....	9
3.4.1 Switch working modes.....	10
3.4.2 Silence the ceiling conference microphone.....	12
3.4.3 Adjust the volume.....	12
4. CONNECTION	13
5. DIAGRAM.....	14
5.1 CONFERENCE SOLUTION WITH PTZ CAMERA AND COLUMN SPEAKERS	14
5.2 CONFERENCE SOLUTION WITH VIDEOBAR, iSHARE X AND CEILING SPEAKERS	14
5.3 CONFERENCE SOLUTION WITHOUT DSP (REMOTE CALL + LOCAL SOUND AMPLIFICATION).....	15
5.4 CONFERENCE SOLUTION WITH DSP (REMOTE CALL + LOCAL SOUND AMPLIFICATION).....	16
5.5 EDUCATION SOLUTION WITH TRACKING CAMERA.....	16
5.6 UPGRADE THE EXISTING APPLICATION.	17
6. PC SOUND SETUP	17
6.1 USB DANTE ADAPTER	17
6.2 SELECT THE RIGHT AUDIO INPUT AND OUTPUT	18
6.3 SELECT THE RIGHT SPEAKER AND MICROPHONE IN MEETING SOFTWARE (ZOOM AS EXAMPLE)	19
7. INSTALATION	19
7.1 POSSIBLE INSTALLATION VARIANTS	19
7.2 VARIANT 1: INSTALLED FLUSH IN A DROPPED/COFFERED CEILING.....	21
7.3 VARIANT 1: INSTALLED FLUSH IN DRYWALL CEILING	23
7.4 VARIANT 2: INSTALLED BY SUSPENDING ROPES	24
7.5 VARIANT 3: MOUNTING THE iSPEAKER CM360 ON A VESA MOUNT.	24
8. SPECIFICATIONS	26

1. SAFETY PRECAUTIONS

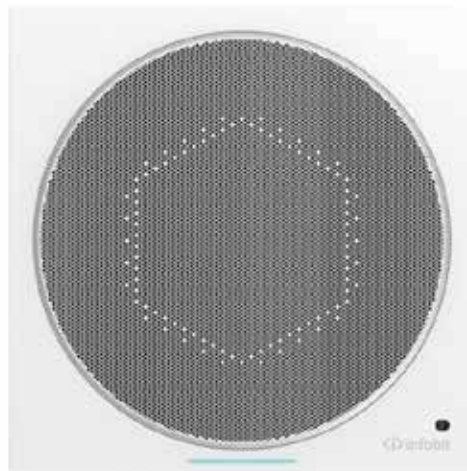
- Please read this safety reminder and product instruction manual carefully.
- Please keep this safety reminder and product instruction manual properly. When the product is given to others for use, be sure to attach the safety reminder and instruction manual.
- When the product is given to a third party for use, please ensure that the instruction manual and safety reminder are included.
- Only approved add-ons, attachments, and spare parts from the manufacturer may be used.
- Do not attempt to disassemble the product casing. If a customer opens the product without authorization, the warranty automatically becomes void.
- All repair work must be performed by authorized service personnel with the appropriate qualifications. Repair work must be performed when the product experiences any form of damage, liquid or foreign objects enter the product, the product is exposed to rain or moisture, the product malfunctions, or the product experiences an accidental fall.
- The product should only be used under the specified technical parameters.
- If the product is damaged during transportation, it should not be put into use.
- When laying cables, ensure that no one can trip over them.
- Prevent the product and its interfaces from contacting any liquids and conductive items that are not required for operation.
- Do not use solvents or corrosive cleaning agents for cleaning.
- The product is intended for indoor use, such as in conference rooms and presentation halls.
- The product can be used for commercial purposes.
- Any use that does not comply with the instructions in the product instruction manual is considered improper use.
- Sphinx is not responsible for any damage caused by the misuse or improper use of the product and additional equipment/accessories.
- Before turning on the machine for debugging, please be mindful of the regulations in your country/region!
- Caution: Excessively high signal levels can damage your hearing and speakers! Before connecting the product, reduce the volume of any connected playback devices to reduce the risk of acoustic feedback.

When installing, the following safety precautions must be observed:

- Assembly and all electronic equipment installation work must be performed by a professional.
- Professionals must use their professional knowledge and experience to evaluate the work delivered, identify potential hazards, and take appropriate safety measures in accordance with relevant regulations and standards.
- Local, national, and international codes and standards must be observed and followed during installation.

2. PACKAGING LIST

- **iSpeaker CM360** x1
- 10m Cat6 network cables x2
- IR Remote controler x1
- Suspension rope set x4
- User manual x1



Instruction manual *1



Lifting rope set *4



Remote control *1



10m Cat6 network cable *2

Additional Components for Pole Mounting, Telescopic Pole Bracket (Additional purchase required).



3. PRODUCT OVERVIEW

3.1 FEATURES

3.1.1 HARDWARE FEATURES

1. 128x MEMS microphone array.
2. 1x RJ45 Dante port.
3. 1x USB C port for debugging.
4. With IR Remote to control mute/ unmute, volume, pickup or reinforcement modes.
5. With indicator to display status of mute/ unmute, volume, pickup or reinforcement modes.
6. The ceiling speaker supports Dante PoE.
7. Supports both sound pickup and local sound reinforcement modes separately or simultaneously.
8. Supports unlimited cascading.
9. Work no matter with or without DSP.
10. Supports -38dBv/94dB SPL @1KHz sensitivity.
11. Supports 65dBv/94dB SPL@1KHz, A-weighted SNR (Signal-to-Noise Ratio)
12. Supports 8x local pickup zones.
13. Supports 8x local sound reinforcement zones.
14. Supports 1x local mute zone.
15. Supports 48kHz sampling rates.

16. Supports AI Noise Reduction Suppression, AI Reverberation Suppression, AI Feedback Suppression, AI Echo Cancellation.
17. Supports cameras tracking.
18. Supports 8 meters pickup distance.
19. Supports AI-based technology with deep-learning model.
20. Supports full-duplex working mode.
21. Supports Spatial DOA.
22. Supports less than 30ms ultra-low latency capability.
23. Supports 10dB local sound reinforcement capability.

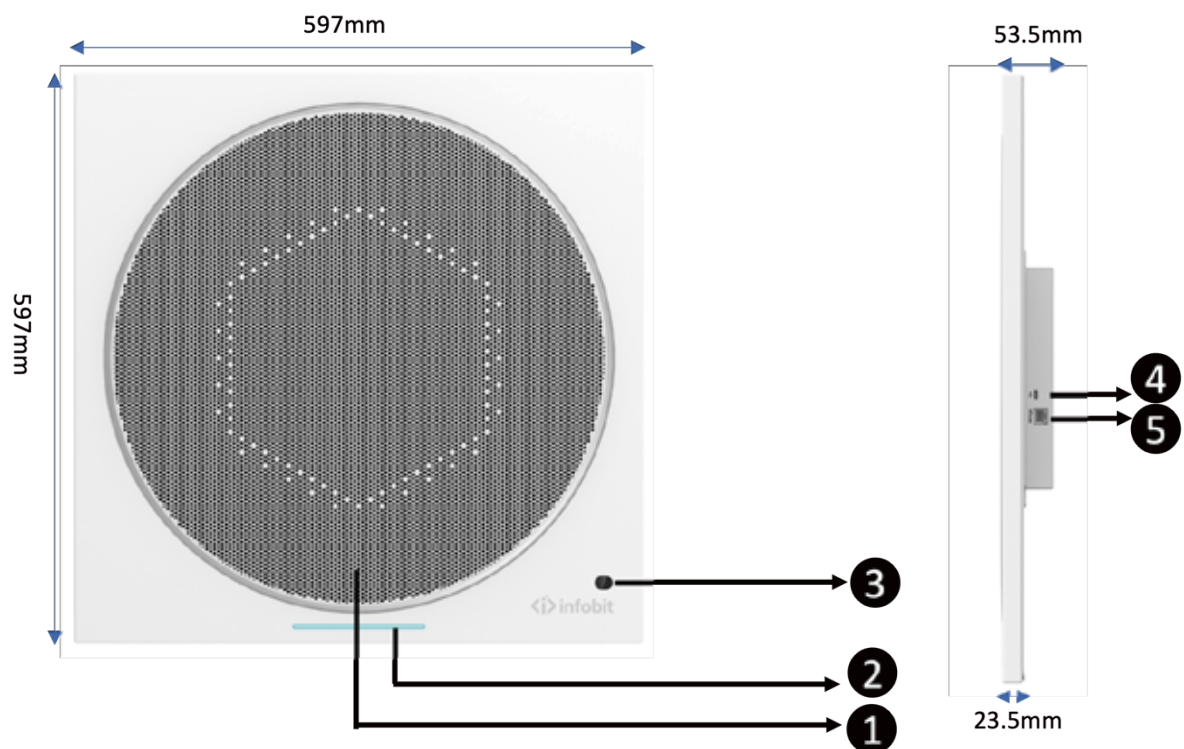
3.1.2 SOFTWARE FEATURES

1. Supports online firmware upgrade.
2. Supports user-friendly GUI.
3. Supports online firmware management.
4. Supports multiple meeting ROOMS management including configuration, rename, copy, delete and import/export settings data.
5. Supports virtual Canvas to setup microphone's locations, positions, directions, and layouts.
6. Supports uploading meeting room drawings picture.
7. Supports edit at least 8x local sound pickup zones.
8. Supports edit at least 8x local sound reinforcement zones.
9. Supports mute function.
10. Supports EQ configuration.
11. Supports AGC configuration.
12. Supports import/ export the configuration data.
13. Supports built-in Dante Controller software.
14. Supports built-in INFOBIT iSound DSP software.
15. Supports LOG management.
16. Supports camera tracking configuration.

3.1.3 MOUNTING FEATURES

The ceiling speaker shall support at least 3x different mounting ways like pendant ropes, mounting bracket, or in-ceiling mounting.

3.2 FRONT & SIDE



1. Reset

By pressing the reset button for a duration of more than 3 seconds and less than 8 seconds, the network configuration will be restored to factory default.

By pressing the reset button for a duration of more than 8 seconds, the entire unit configuration will be restored to factory default.

2. Status indicator

Off	Not powered on
Red (All constant light)	Mute

Red (All slowly flashing)	Equipment failure
Red (Partial slowly flashing)	Restore factory settings
Green (Marquee light)	During the startup process
Green (All constant light)	The device is working
Green (All slowly flashing)	The device is being upgraded
Blue (All constant light)	Local sound amplification is enabled
Blue light bar increment	Volume +
Blue light bar decrement	Volume -

3. IR

IR remote control: Switches the working modes and adjusts the local sound volume.

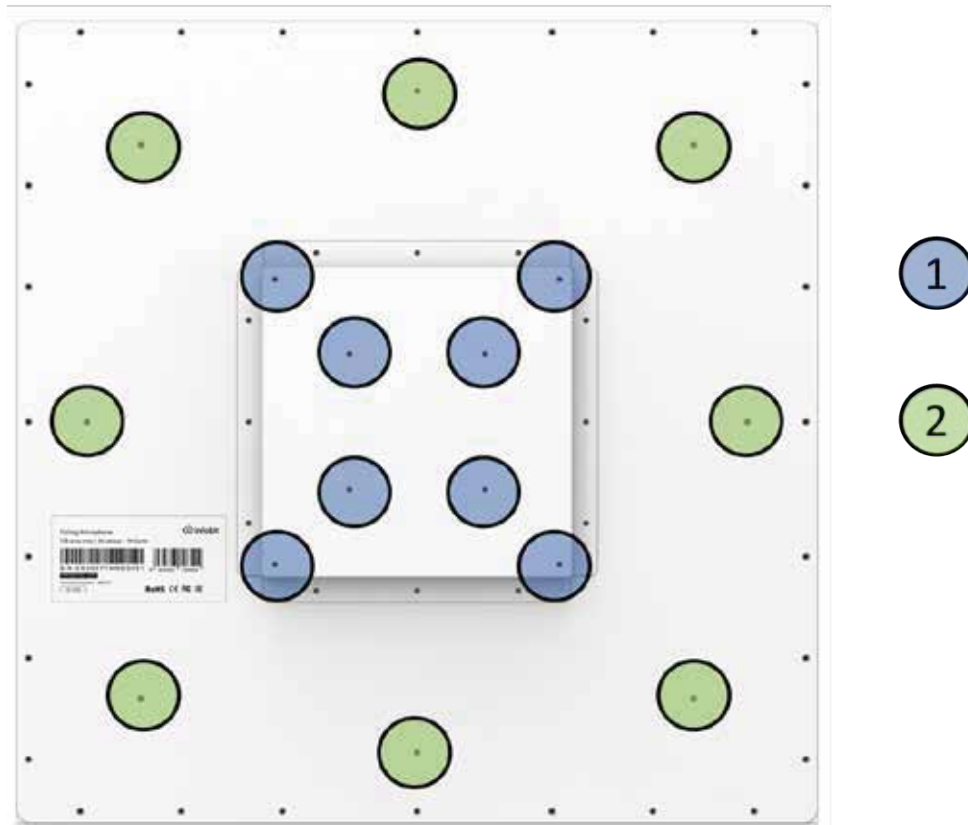
4. Debug port

USB C port: Used for debugging.

5. Dante Audio & PoE Power Supply

RJ45 ethernet port: Used to connect to a POE switch or POE power adapter to power the device and transmit Dante audio.

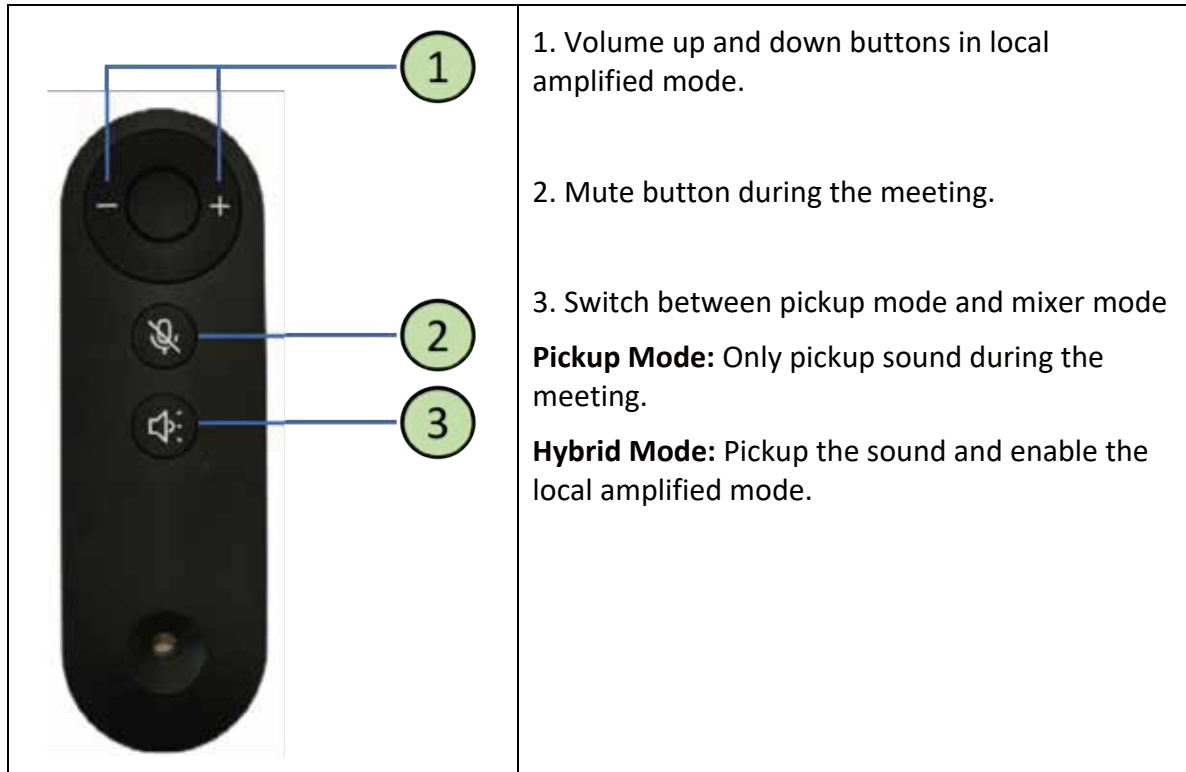
3.3 BACK SIDE



Threaded holes

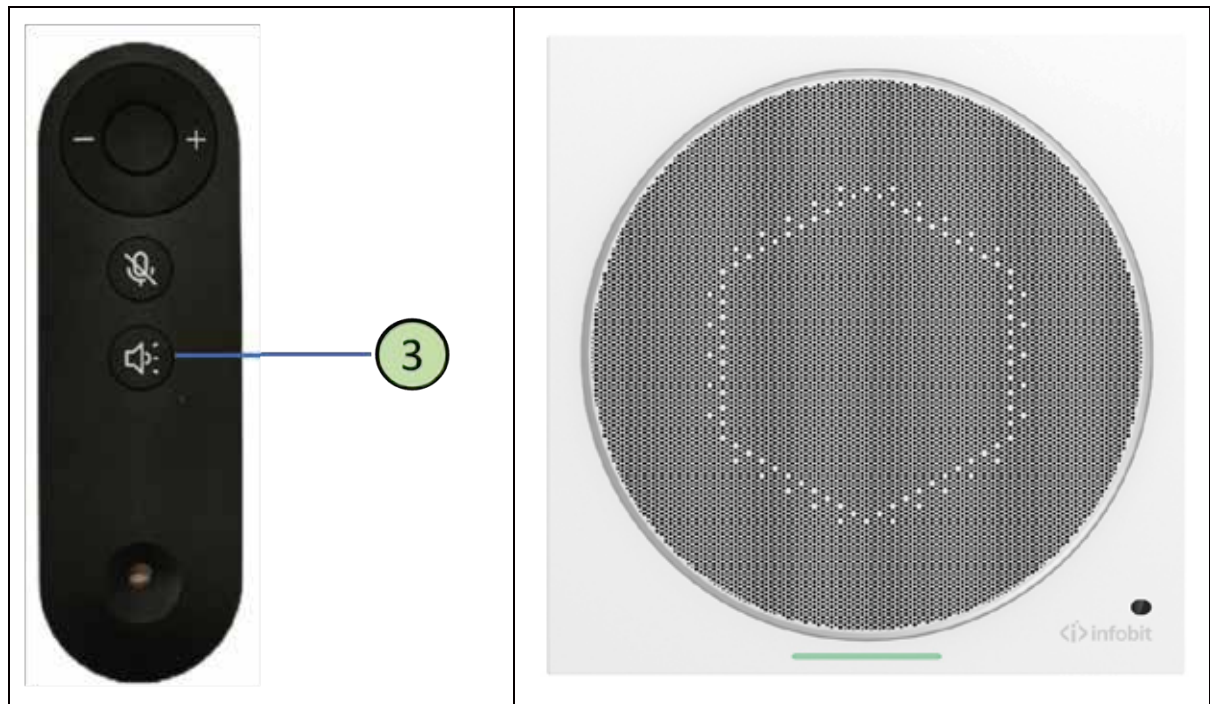
- 1: Threading hole for installation of the ceiling mounting bracket.
- 2: Threading hole for installation of the suspension ropes.

3.4 IR REMOTE

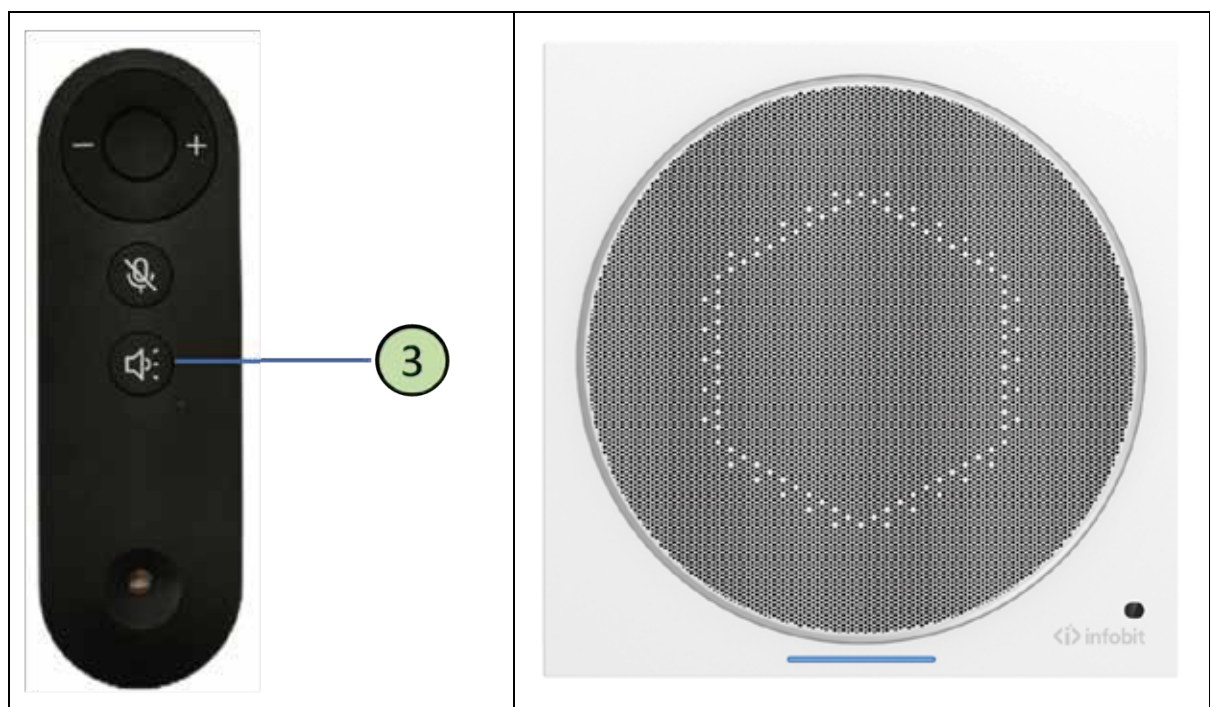


3.4.1 Switch working modes

In conference **Pickup Mode**, press the speaker button on the remote control, and the indicator light on the lower side of the **iSpeaker CM360** will turn green. During the conference, the ceiling conference microphone only performs conference pickup, and does not perform local sound reinforcement.

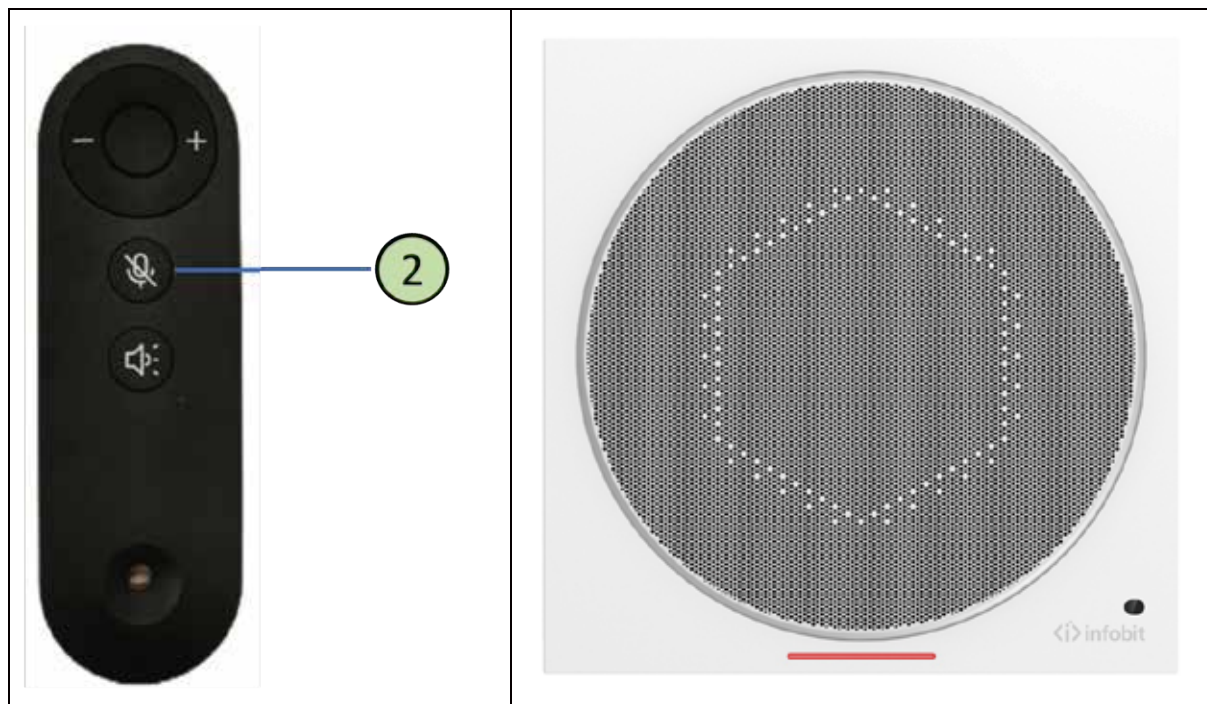


In the **Hybrid Mode**, press the speaker button on the remote control again, and the indicator light on the bottom side of the **iSpeaker CM360** will turn blue. During the conference, the ceiling conference microphone will simultaneously perform conference pickup and local sound reinforcement.



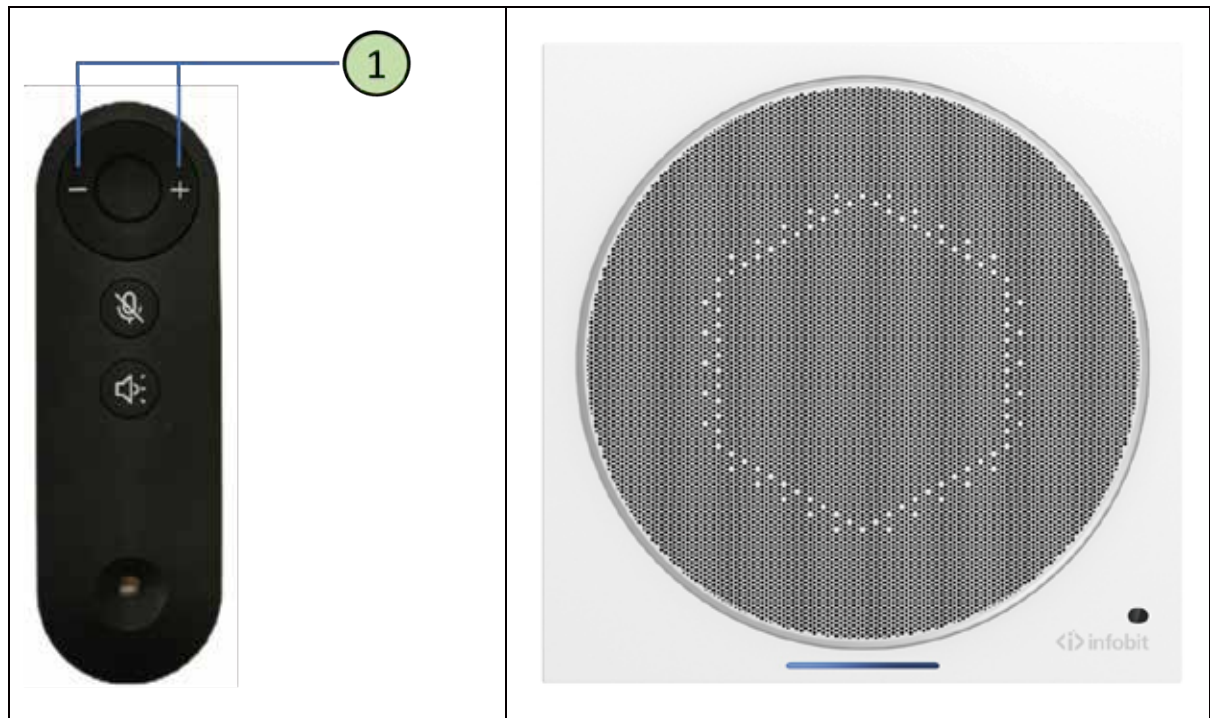
3.4.2 Silence the ceiling conference microphone

During the conference, click the mute button, and the indicator light on the lower side of the **iSpeaker CM360** will turn red, indicating that the sound pickup has been turned off and the voice of the speakers in the local conference will no longer be picked up. The far-end attendees will not be able to hear the voice of the speakers.



3.4.3 Adjust the volume

During the conference, click the "+" and "-" buttons on the remote control to weaken or enhance the sound volume of the ceiling conference microphone.

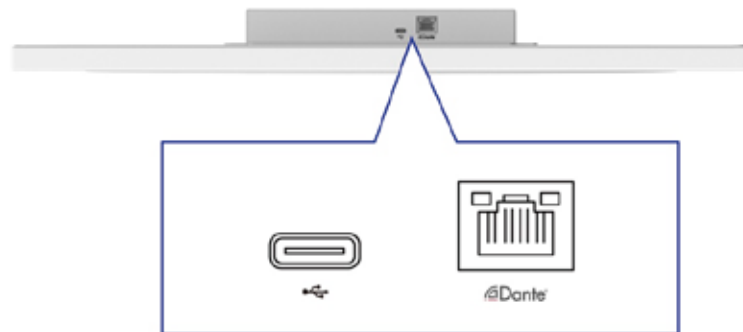


4. CONNECTION

Connect the **iSpeaker CM360** to the Dante audio network through a Cat6A network cable.

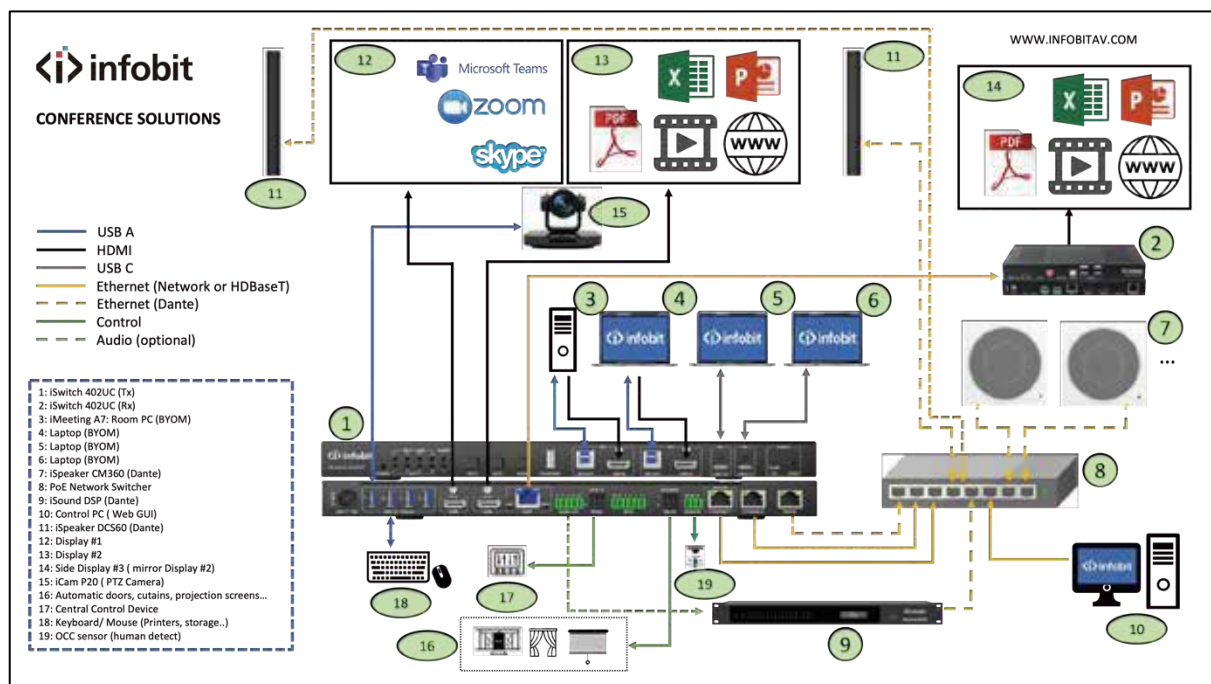
The Ethernet PoE/Ctrl RJ-45 socket is used to both power the **iSpeaker CM360** Ceiling microphone via Power over Ethernet and configure it using the **iSpeaker Controller** software.

Note: In your network you can either use a switch that provides PoE or a PoE injector. Use only shielded STP network cables that do not exceed an AWG value of 24.

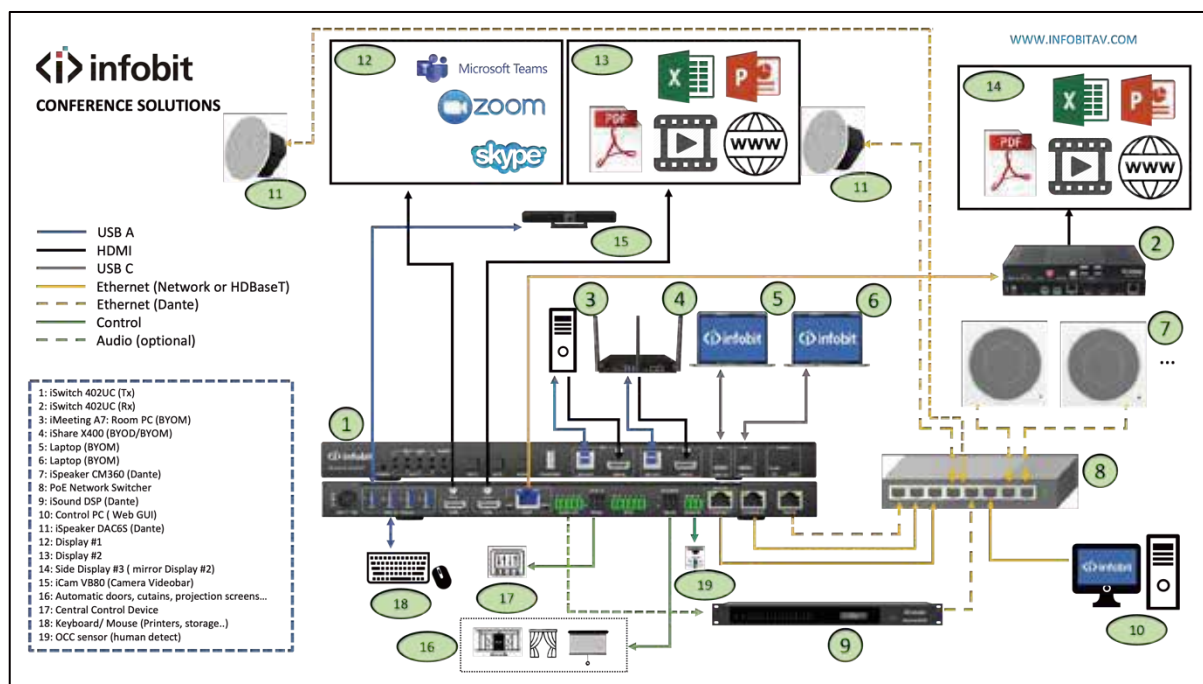


5. DIAGRAM

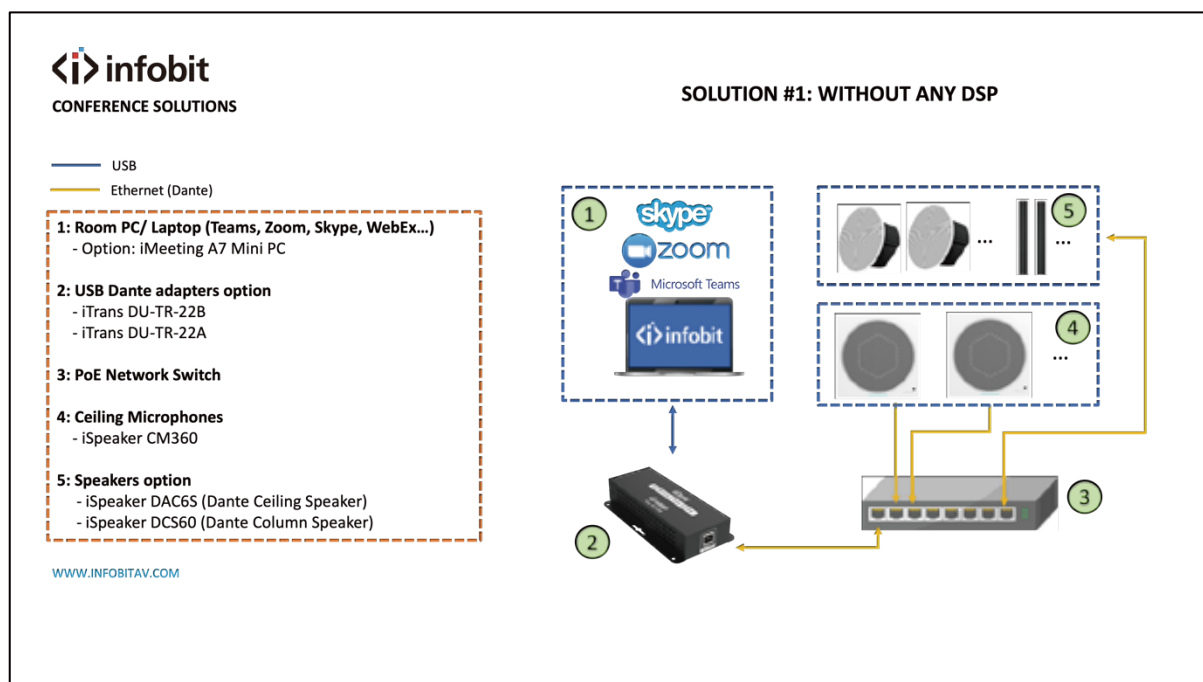
5.1 Conference solution with PTZ camera and column speakers



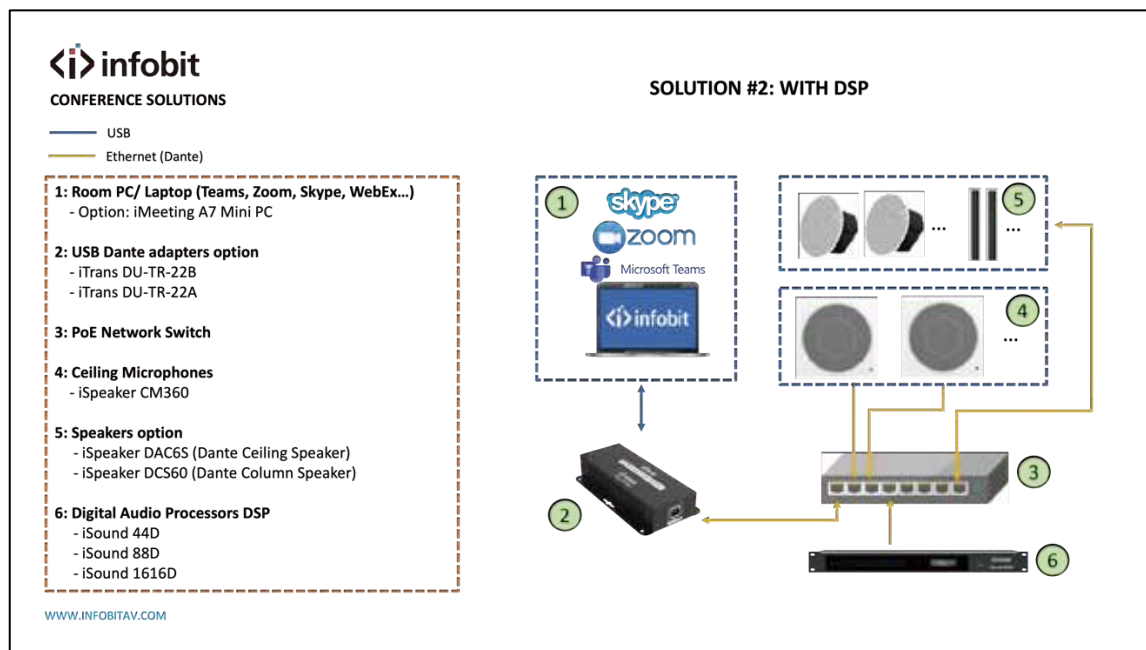
5.2 Conference solution with videobar, iShare X and ceiling speakers



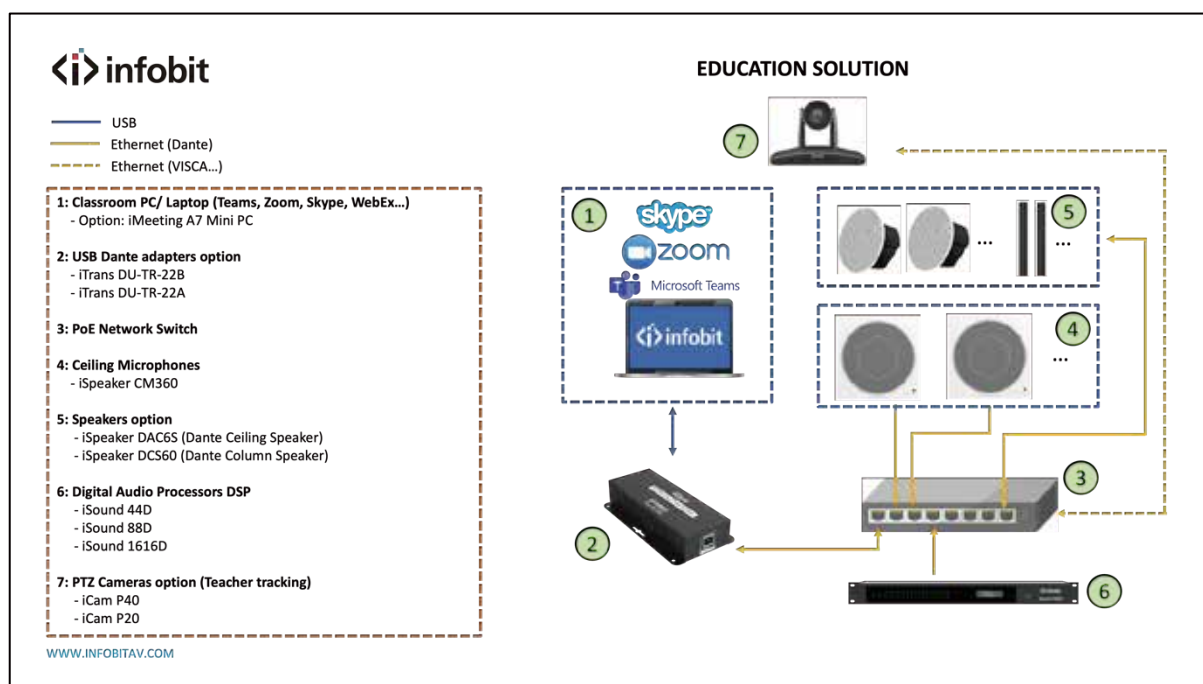
5.3 Conference solution without DSP (Remote call + Local sound amplification)



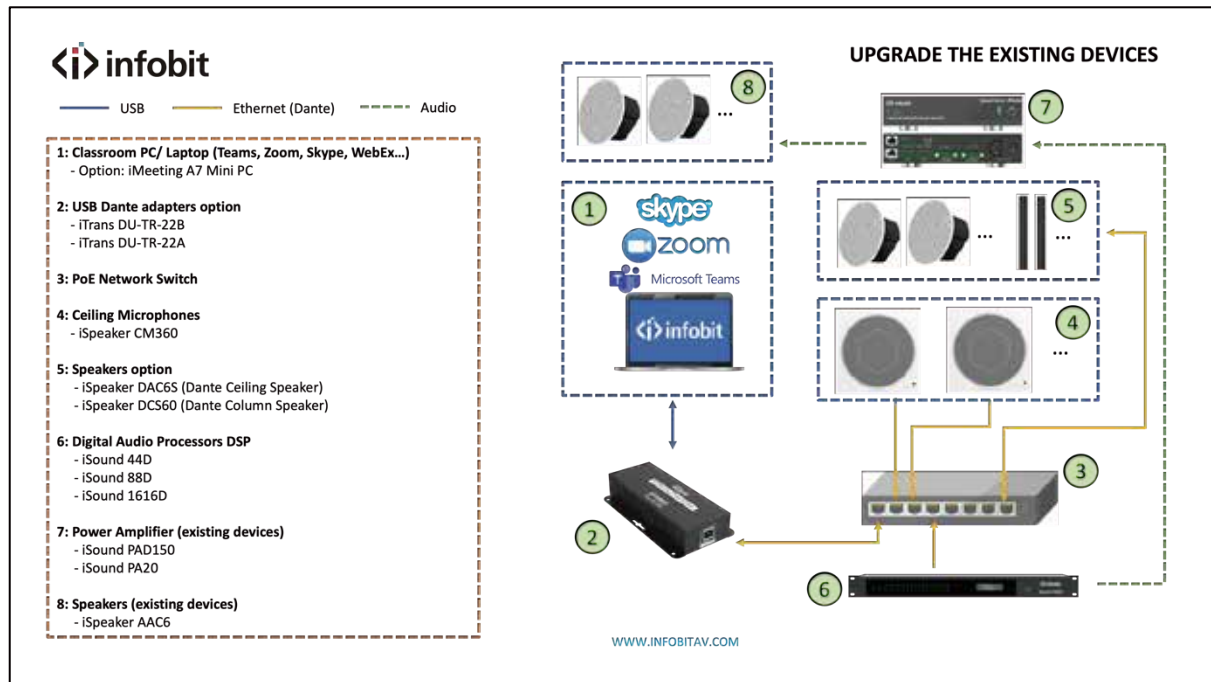
5.4 Conference solution with DSP (Remote call + Local sound amplification)



5.5 Education solution with tracking camera



5.6 Upgrade the exiting application.



6. PC SOUND SETUP

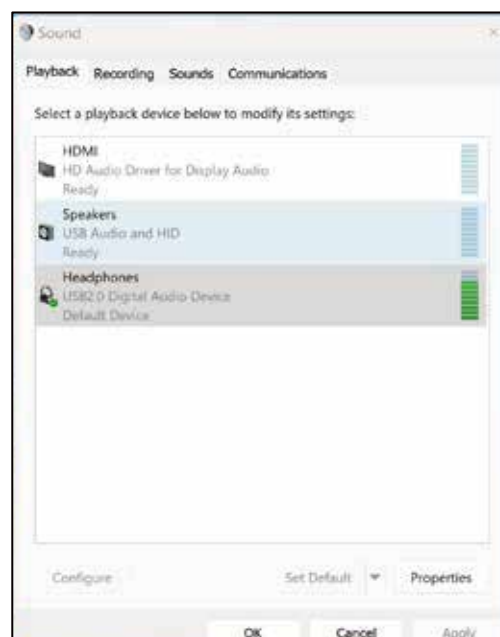
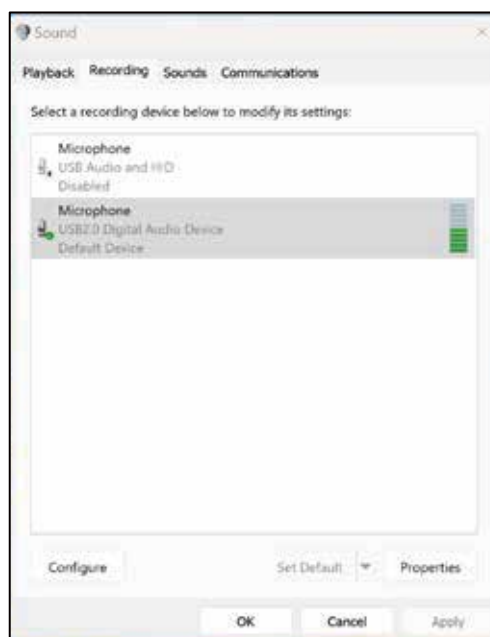
6.1 USB DANTE adapter

The example is based INFOBIT iTrans DU-TR-22B, the USB to Dante adapter, which can convert the network audio transmitted by the Dante protocol into a digital audio signal that supports the UAC protocol. Please connect the USB port to your PC.



6.2 Select the right AUDIO INPUT and OUTPUT

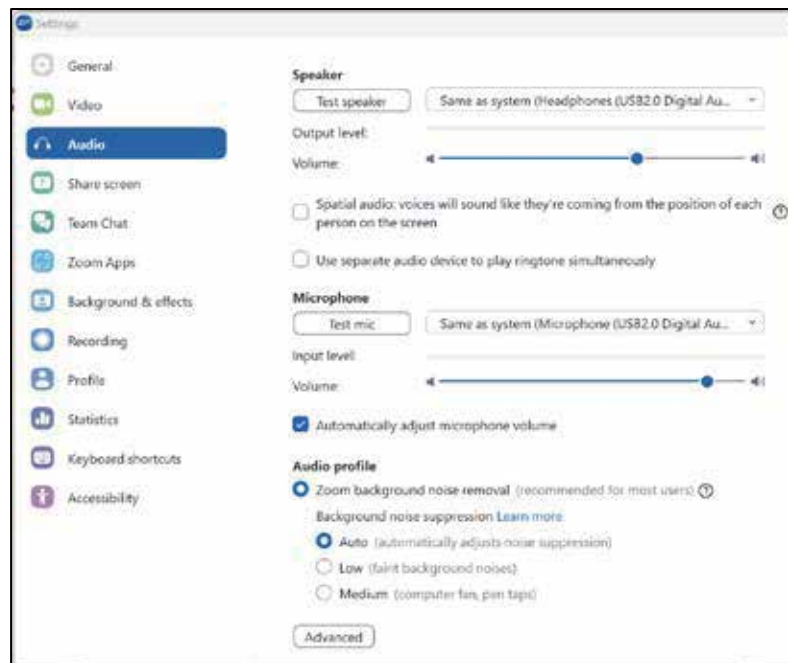
In the sound card of the PC connected to the Dante audio adapter **iTrans DU-TR-22B**, it can be seen that all devices have been detected with the GREEN audio indicator bar.



6.3 Select the right Speaker and Microphone in meeting software (Zoom as example)

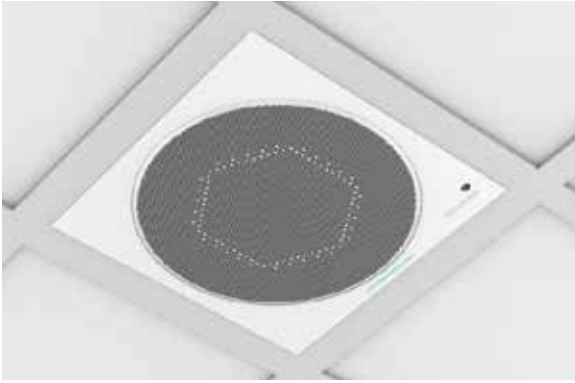
Select the system default speaker and microphone array on the audio settings on the software, and then use the iSpeaker CM360 for audio and video conferencing communication.

Note: On video conferencing software, it is necessary to turn off audio processing functions (background noise reduction, automatic adjustment of microphone volume, etc.) to avoid secondary duplication with the audio processing functions of the **iSpeaker CM360**, which can affect the audio quality of the conference during use.



7. INSTALLATION

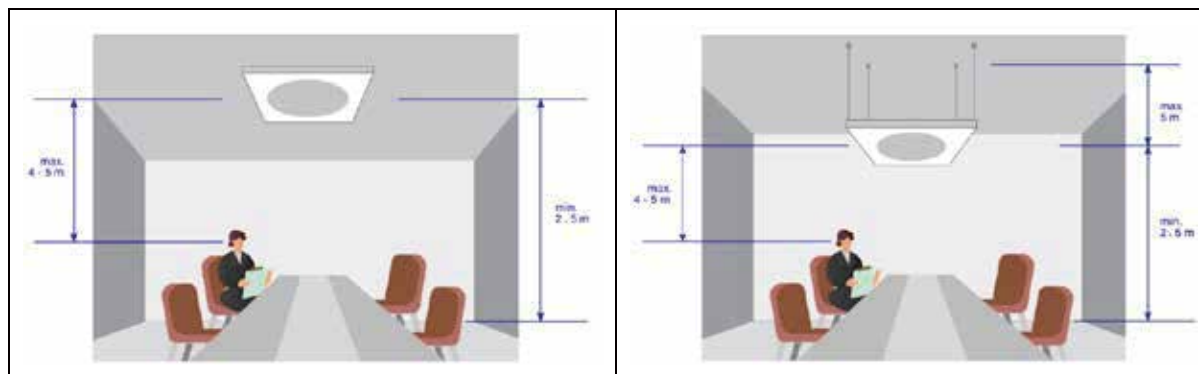
7.1 Possible installation variants

	Variant 1: Installed flush in a dropped/coffered ceiling
	Variant 2: Suspended from the ceiling
	Variant 3: Mounted on the ceiling by VESA mount

Adapting the installation height

Observe the following minimum and maximum distances when installing the **iSpeaker CM360**.

Recommended distances for variants 1:	Recommended distances for variants 2 and 3:
---------------------------------------	---



The recommended maximum distance from the speaker to the **iSpeaker CM360** is 4 to 5 m.

The minimum distance from the **iSpeaker CM360** to the floor is 2.50 m.

Note: If installation variants 1 would result in a distance greater than the recommended maximum due to the room height, we recommend installation variant 2 or 3.

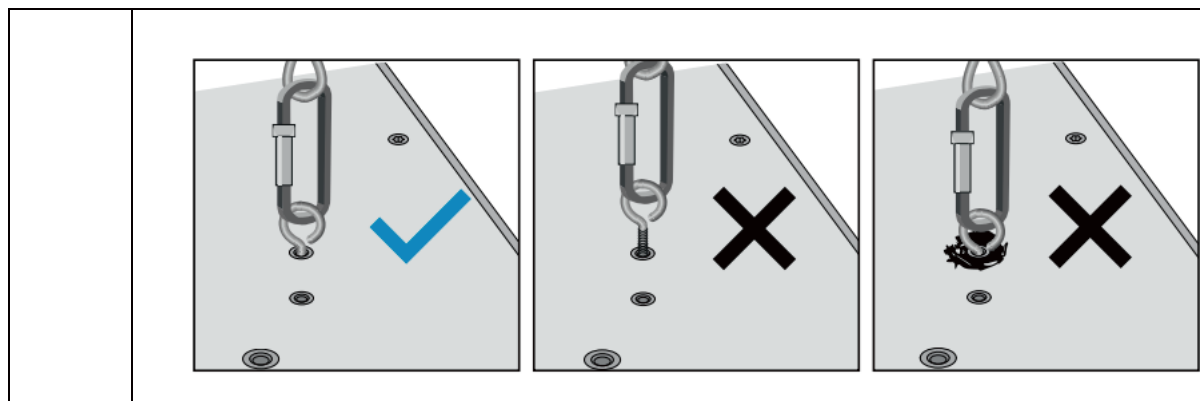
7.2 Variant 1: Installed flush in a dropped/coffered ceiling

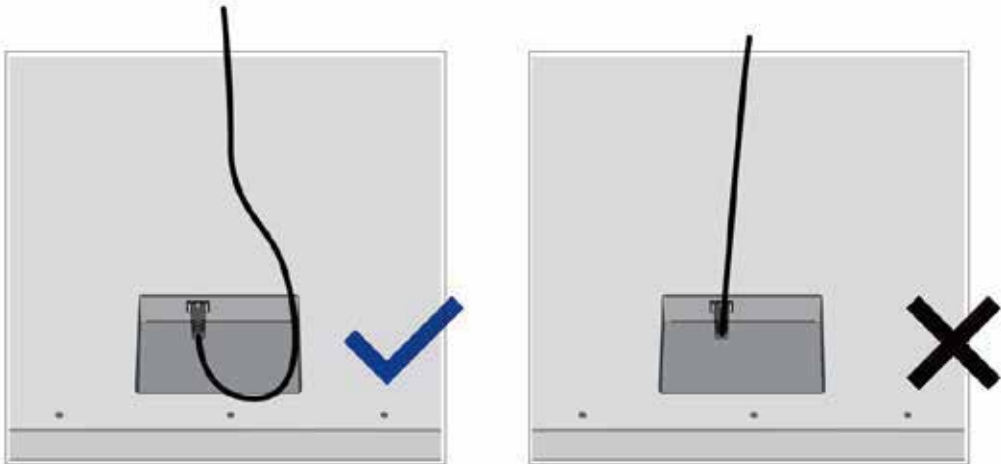
The **iSpeaker CM360** can be easily installed in a dropped ceiling or coffered ceiling with square ceiling tiles (600 x 600 mm). Angle brackets are available for ceiling tiles with the standard dimensions of 2 ft or 625 mm. When flush mounting, do not install the **iSpeaker CM360** directly next to lights or other electrical devices in the ceiling.



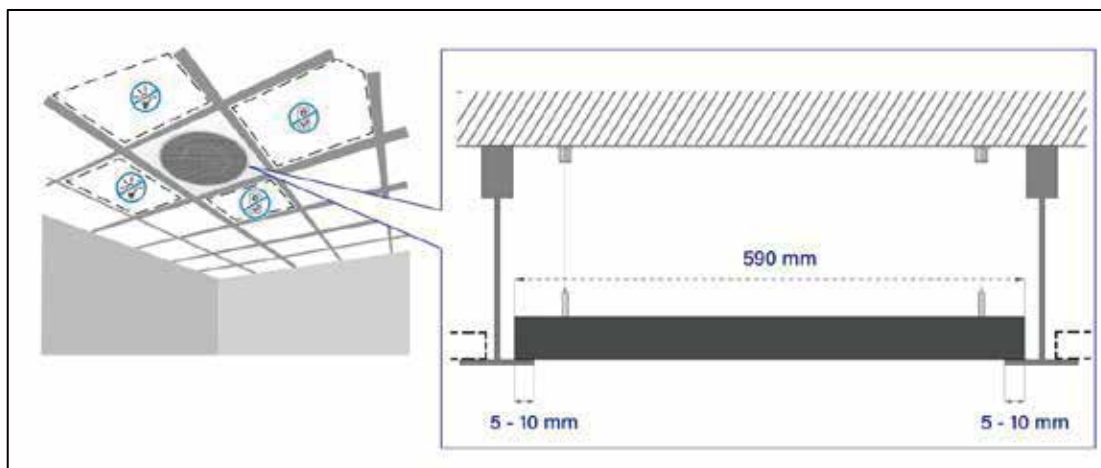
When mounting the unit in the ceiling, always additionally secure the **iSpeaker CM360** against falling:

- by using the ceiling suspension safety ropes, which can be attached at the intended mounting points using the included eye bolts.
- Hand-tighten the M4x10 eye bolts in the **iSpeaker CM360** to avoid damaging the metal housing by screwing them in too deeply.
- Make sure that the thread on the eye bolt is fully within the thread at the mounting point. (*Note: Installation of variant 1 & 2 require the same attention of these cations.*)



	RECOMMENDED CABLING Observe the following when connecting and running the cables: ➤ Always run the cables carefully and in a loop shape inside the installation recess. ➤ Make sure not to kink the cables to avoid breaking them or damaging the plugs.
	

Installing the **iSpeaker CM360** in the ceiling (600 x 600 mm grid).



- Remove a tile from the ceiling.
- Place the **iSpeaker CM360** in the frame in the coffered ceiling.
- Maintain the distances indicated in the figure.

7.3 Variant 1: Installed flush in drywall ceiling



CAUTIONS

Observe the following when install:

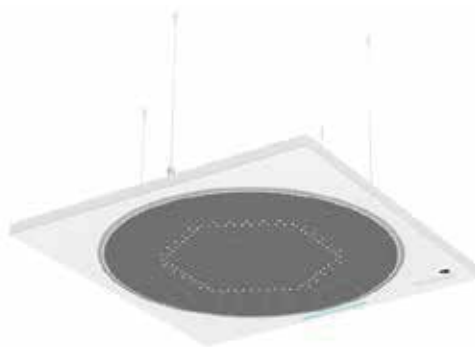
- The ceiling-mounted conference microphone can be easily installed in suspended soundproof ceilings or drywall ceilings (600 x 600 mm) ceilings.
- Be careful not to install ceiling microphones next to light fixtures or other electrical equipment on the ceiling! (Same as guidance in 7.2)



Cut the ceiling according to the size of the ceiling-mounted conference microphone.

7.4 Variant 2: Installed by suspending ropes

Same as 7.2

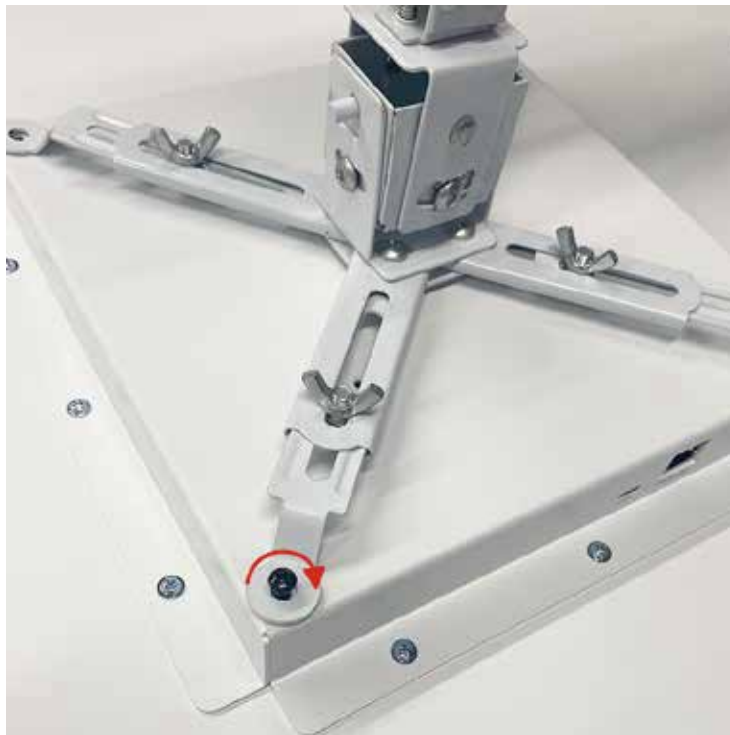


7.5 Variant 3: Mounting the iSpeaker CM360 on a VESA mount.

The **iMount S200** adapter (available separately) allows you to mount the **iSpeaker CM360** on any 100 x 100 mm or 200 x 200 mm VESA mount.



- Fasten the ceiling mount to the ceiling using suitable screws and anchors.
- Observe the mounting specifications from the manufacturer.



8. SPECIFICATIONS

Model	iSpeaker CM360
Name	Dante Ceiling Microphone
Color	White
Size	597mm*597mm*53.5mm
Net Weight	5KG
Power Supply	PoE
Installation Method	Ceiling mount
Mic Type	128-unit MEMS microphone array
Sensitivity	-38dBv/94dB SPL @1KHz
Signal-to-Noise Ratio	65dBv/94dB SPL@1KHz, A-weighted
Dante Channels	2x2
Remote Meeting Pickup Channel	1x
Local Sound Reinforcement Channel	1x
Remote Conversation Pickup Zones	8x
Local Sound Reinforcement Pickup Zones	8x
Sampling Rate	48kHz
Maximum Background Noise Suppression	35dB
AI Noise Reduction Suppression	Support
AI Reverberation Suppression	Support
AI Feedback Suppression	Support
AI Echo Cancellation	Support
Delay (Automatic Mixing Output, Including Dante)	<30ms

Cascade Quantity	Unlimited
Cascade Method	Dante audio
RJ45 Port	1x (Dante Audio Transmission, PoE)
USB C Port	1x (For debug)
Reset Button	1x