D6686 Immersive Panoramic Audio System Solution

I. Solution Overview

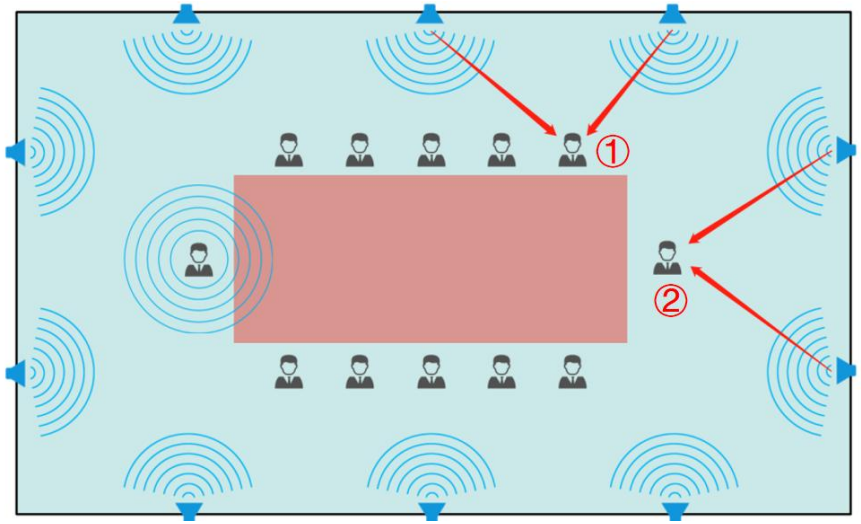
- In modern concert halls and immersive theaters, audiences have increasingly higher demands for sound experience. Traditional sound systems struggle to achieve precise sound source positioning and dynamic movement. However, the D6686 Immersive Panoramic Audio Processor, with its 16 input/output channels and advanced panoramic audio algorithms, enables precise positioning and trajectory movement of sound in three-dimensional space, significantly enhancing audience immersion and auditory experience.

Project Requirements

- **Object-Based Sound:** Treat each individual sound source as an “object” that can be precisely positioned in three-dimensional space.
- **Dynamic Sound Trajectories:** Enable sound sources to move along predefined paths, enhancing the narrative and immersive experience of performances.
- **Enhanced System Integration and Usability:** Provide intuitive system control, debugging, and scene management via a Web-based visual interface, reducing operational complexity and improving work efficiency.
- **Guaranteed Superior Sound Quality:** Ensure high-fidelity, low-noise, and low-latency audio transmission and processing throughout the system.

II. Pain Points

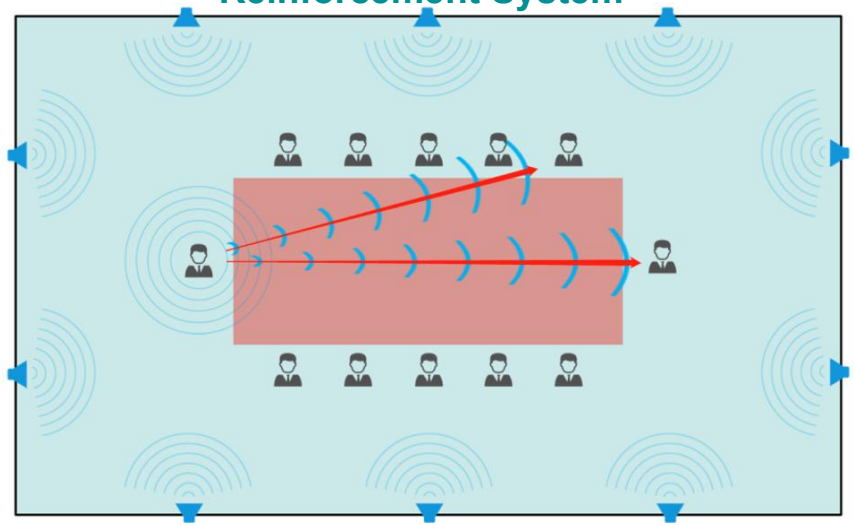
Traditional Sound Reinforcement System



The perceived direction of sound often does not match the actual position of the speaker. When the speaker moves, the direction of sound heard by the audience remains unchanged.

VS

Immersive Panoramic Sound Reinforcement System



An immersive panoramic sound venue not only delivers highly realistic sound but also enables precise localization. Regardless of speaker placement or the audience's location in the venue, each seat perceives sound coming from the actual position of the speaker.

III. Scenario Design

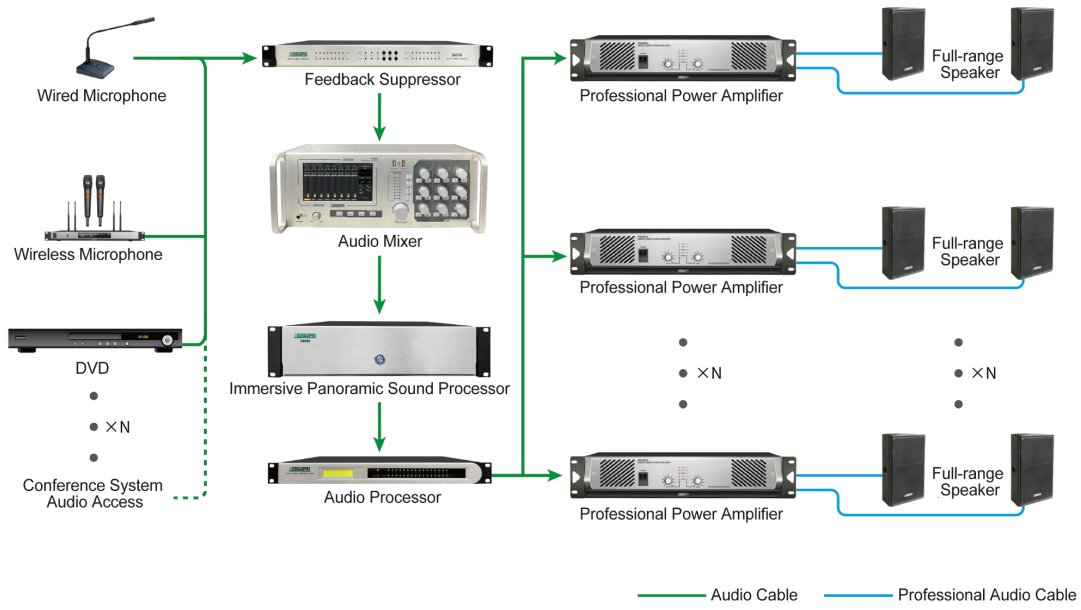
Project Design:

- Measure the target space, including dimensions, reverberation time, speaker zones, and audience areas.
- Use our patented algorithms to determine the number, placement, and orientation of speakers based on the measurement results.
- After arranging the speakers as required, connect them to the immersive audio processor and input data via the network.

System Advantages:

- Employs proprietary audio algorithms with advanced and efficient data processing and high-precision sound source localization calculations, enabling participants to clearly identify the direction of each sound source.
- Resolves inconsistencies in perceived sound image direction, ensuring that audiences at different locations perceive sound as coming from the actual source, with uniform sound pressure.
- Creates an immersive meeting experience that facilitates effortless communication, enhances meeting efficiency, and eliminates concerns related to pickup distance limitations and insufficient sound pressure, allowing for seamless and uninterrupted communication.

System Topology:



IV. Panoramic Audio Solution Configuration for Conference Hall

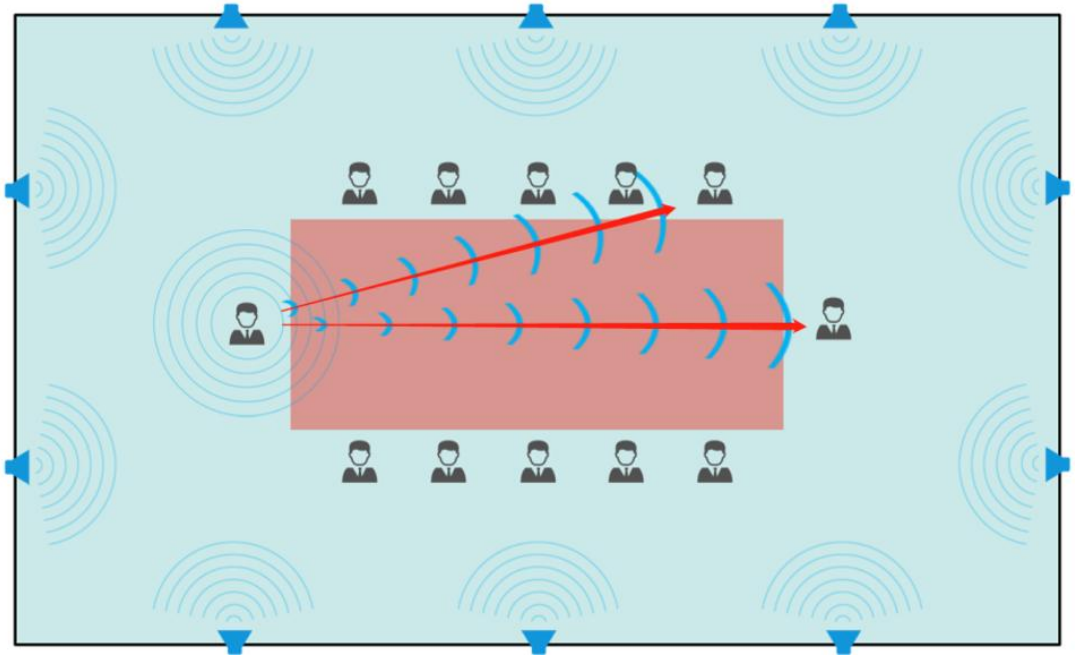
System Configuration

Conference Room Size: 100–200 m².

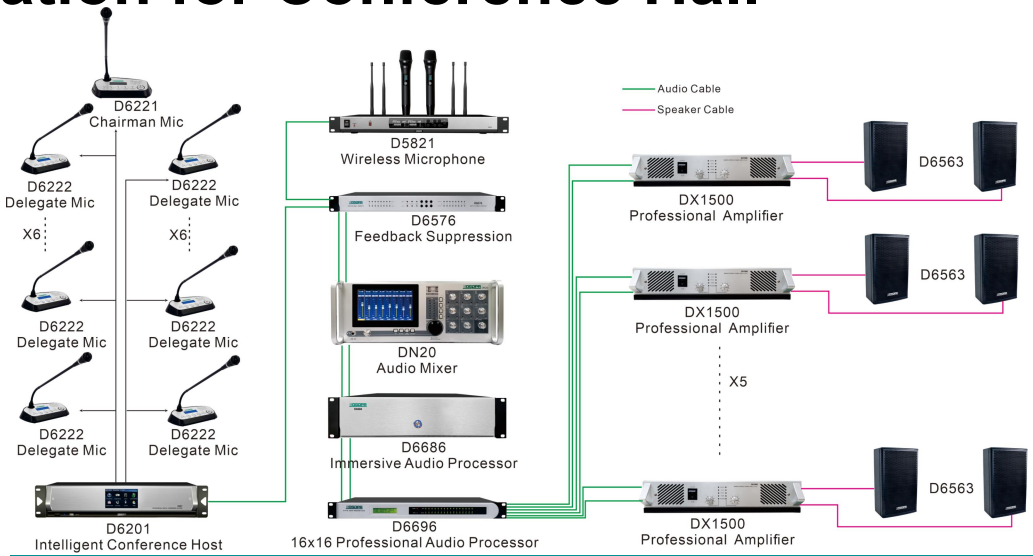
System Components: Conference system + Immersive panoramic audio system.

Target Localization Approach:

- Place loudspeakers as close as possible to the sound source positions to construct the acoustic model.
- Use fixed preset localization points (fixed microphone positions). The sound positions and movement paths are predefined in the model. Once activated, the sound sources will follow the preset trajectories automatically.



System Rendering



No.	Model	Product Name	Quantity
1	D6201	Intelligent Conference Host	1 pc
2	D6221	Desktop Chairman Microphone with Voting Function	1 pc
3	D6222	Desktop Delegate Microphone with Voting Function	12 pcs
4	D5821	Wireless Microphone System	1 pc
5	D6576	Automatic Feedback Suppressor	1 pc
6	DN20	20-Channel Rack-Mounted Digital Mixing Console	1 pc
7	D6686	Immersive Audio Processor	1 pc
8	D6696	16×16 Professional Audio Processor	1 pc
9	DX1500	Professional Stereo Digital Power Amplifier (8Ω; 2×230W)	5 pcs
10	D6563	8" Two-Way Full Range Speaker	10 pcs

Note: This solution is provided for reference only. For specific requirements, please feel free to contact us.

V. Panoramic Audio Solution Configuration for Lecture Hall

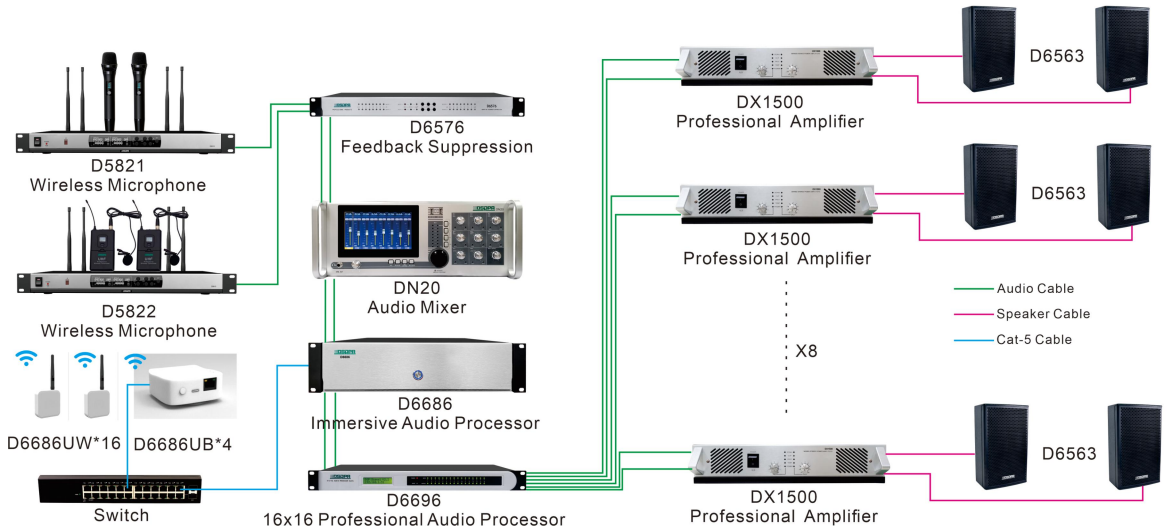
System Configuration

Lecture Hall Size: 200–300 m².

System Components: Wireless microphone system + Immersive panoramic audio system.

Target Localization Approach:

- Position loudspeakers as close as possible to the sound source points to establish the acoustic model.
- Mobile speaker localization: Utilize the D6686UB positioning base station for real-time tracking. The speaker needs to wear the D6686UW beacon to enable accurate position confirmation.



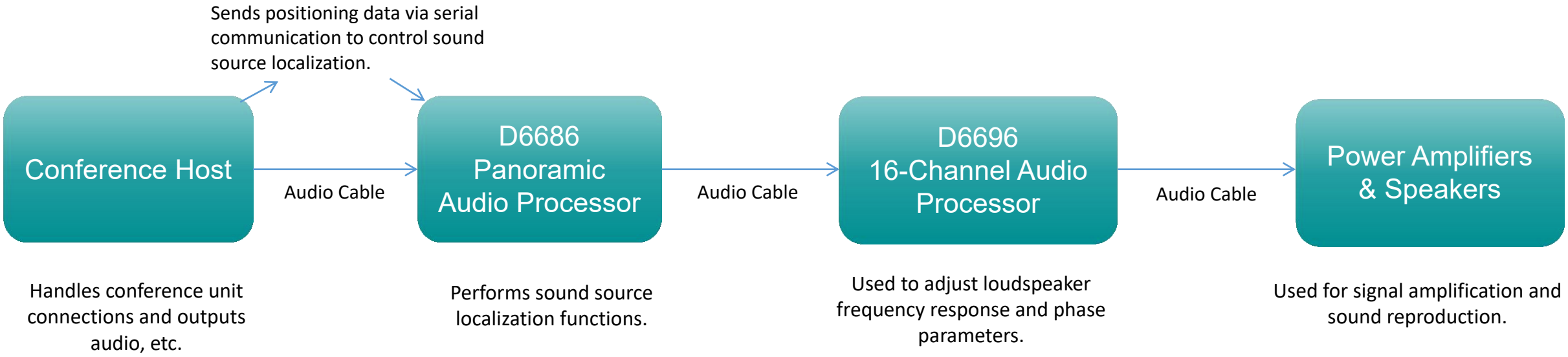
No.	Model	Product Name	Quantity
1	D5821	Wireless Microphone System	1 pc
2	D5822	Wireless Microphone System	1 pc
3	D6576	Automatic Feedback Suppressor	1 pc
4	DN20	20-Channel Rack-mounted Digital Mixing Console	1 pc
5	D6696	16×16 Professional Audio Processor	1 pc
6	DX1500	Professional Stereo Digital Power Amplifier (8Ω; 2×230W)	8 pcs
7	D6563	8" Two-Way Full Range Speaker	16 pcs
8	D6686	Immersive Audio Processor	1 pc
9	D6686UW	UWB Beacon	16 pcs
10	D6686UB	UWB Positioning Base Station	4 pcs

Note: This solution is provided for reference only. For specific requirements, please feel free to contact us.

System Rendering

With the speaker wearing the D6686UW beacon, the sound is dynamically localized and moves in real time according to the speaker’s position within the lecture hall.

VI. Panoramic Audio System Architecture



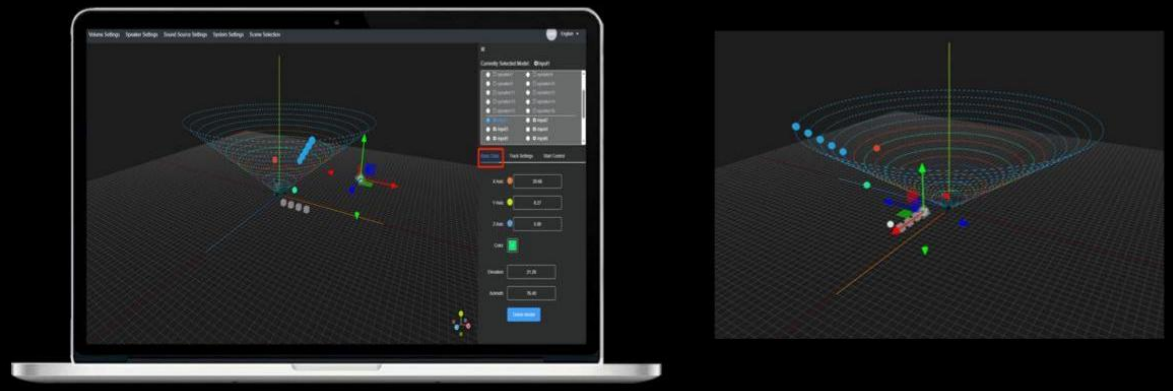
VII. Patented Immersive Panoramic Audio Algorithms

Immersive Audio System

- **Speaker Layout**
  - The speaker layout can be installed according to local conditions on the sound reinforcement site, with no specific requirements for speaker placement.
  - Different speaker layouts can be quickly optimized for the best positioning and sound effects, enhancing installation and setup efficiency.
- **Immersive Audio Processor**
  - Exclusive Audio Processing Algorithm
  - Combining speaker placement plans with customer needs, the algorithm provides unique parameters and processing solutions.

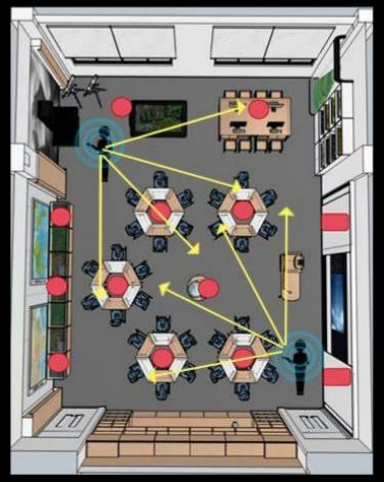
Independent tracking and positioning for up to 16 individuals

Project Reference | Device Space Modeling

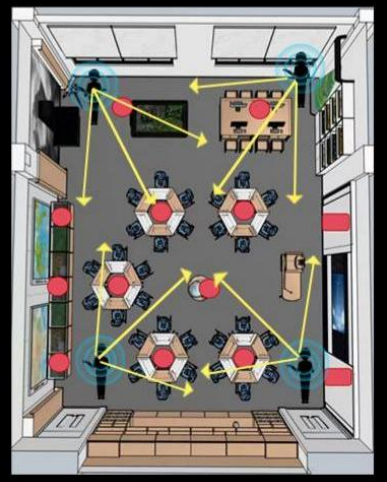


Web control

Solution for 2 individuals



Solution for 4 individuals



VIII. D6686 Immersive Audio Processor

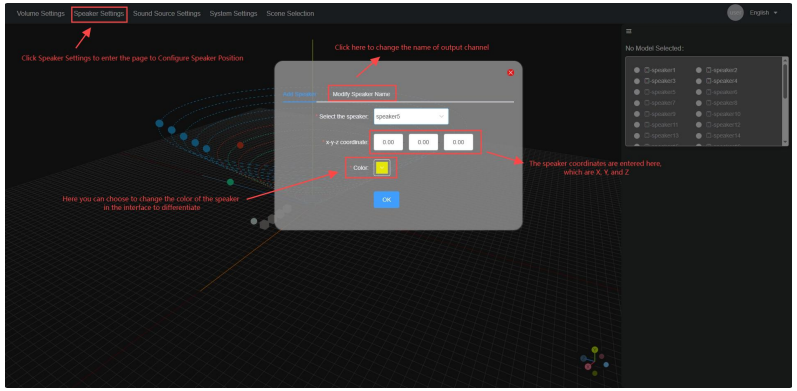
Features:

- Built-in high-performance DSP with patented immersive panoramic audio algorithms.
- Equipped with 16 XLR inputs and 16 XLR outputs.
- Supports simultaneous localization adjustment for all 16 input channels.
- Software operations take effect in real time, enhancing ease of use.
- User interface allows adjustment of sound source trajectories, preset paths, and volume levels.
- Suitable for various conference halls, museums, and concert halls.

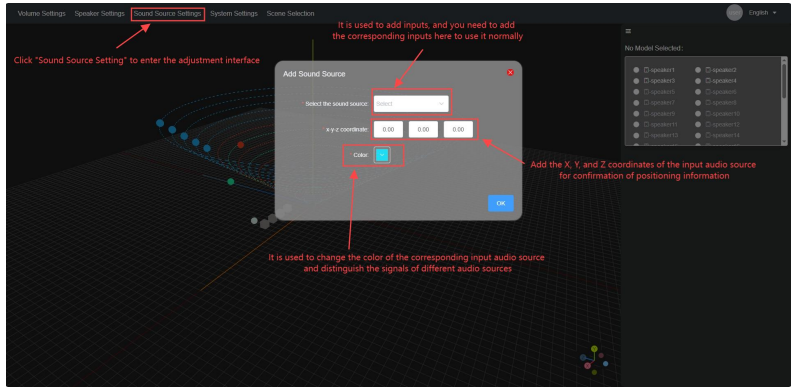
Model		D6686
Signal Processing	DSP	32-bit Fixed / Floating-point DSP×6
Digital-Analog Conversion	bit	24-bit
Input & Output	Type	XLR
Voltage	(Balanced)	AC 100V-240V 47-63Hz
Temperature Environment		-20°C- 80°C
Product Size (mm) (L×W×H)		484 × 410 × 111
Gross Weight		10.5kg
Net Weight		9.5kg

IX. Software Interface Functions

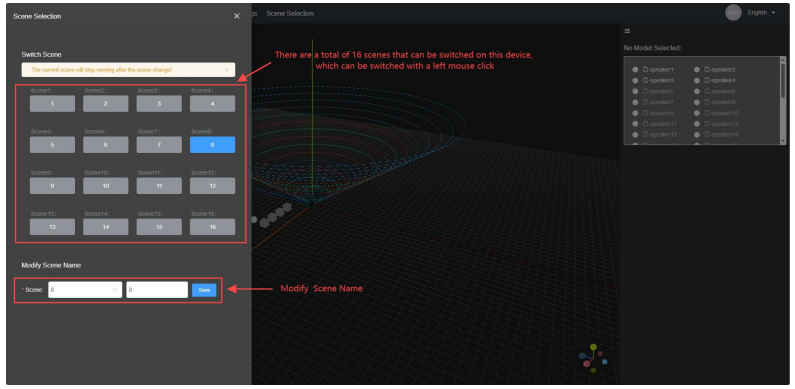
The D6686 Immersive Panoramic Audio Processor allows users to flexibly adjust key parameters for each input channel via a Web-based interface. With our patented algorithms performing parameter calculation and conversion, the system significantly enhances sound quality, imaging, and audio effects, delivering an exceptional immersive experience.



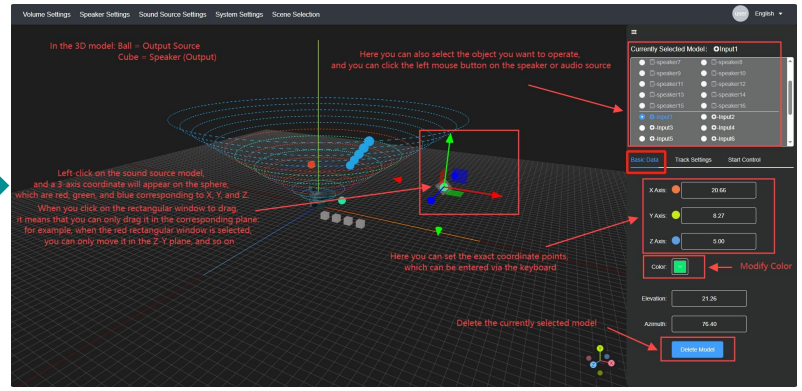
① Speaker configuration: Users can rename output channels and modify their display colors for easier identification.



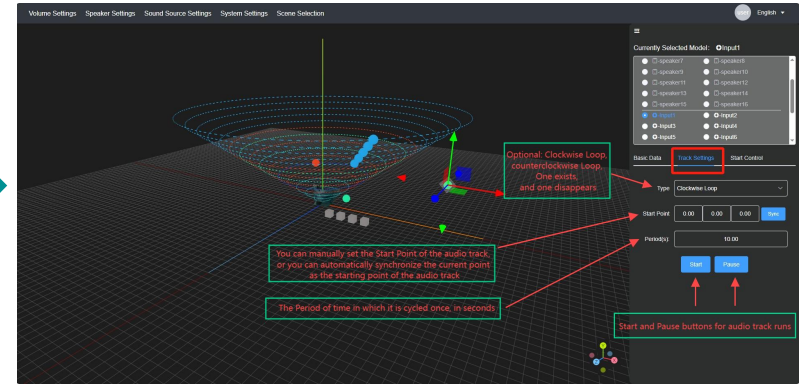
② Input Source Management: Users can add input sources and assign them spatial coordinates (X, Y, Z) and colors to achieve precise sound source localization and differentiation.



③ Scene Switching: A total of 16 scenes are available for user selection.



④ Sound Source & Speaker Positioning: In the 3D view, sound sources and speakers can be positioned by dragging with the mouse or entering exact coordinates via the keyboard.



⑤ Trajectory Settings: Users can define motion paths for sound sources (e.g., loop, fade-out), set movement cycles, and control start/stop behavior.

X. Application Scenarios

Auditoriums

Conference Rooms

Multi-function Halls

Banquet Halls

Classrooms

The D6686 Immersive Panoramic Audio Processor is especially suitable for professional venues that demand high spatial precision and dynamic sound performance. Beyond enhancing audio quality, it leverages sound image localization and trajectory control to create a truly “audible and visible” immersive sound field, making it one of the most competitive solutions in modern audio systems.

CREATING THE BEST

SOUNDING THE WORLD

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