CamConnect AI-Box1

User Manual - English
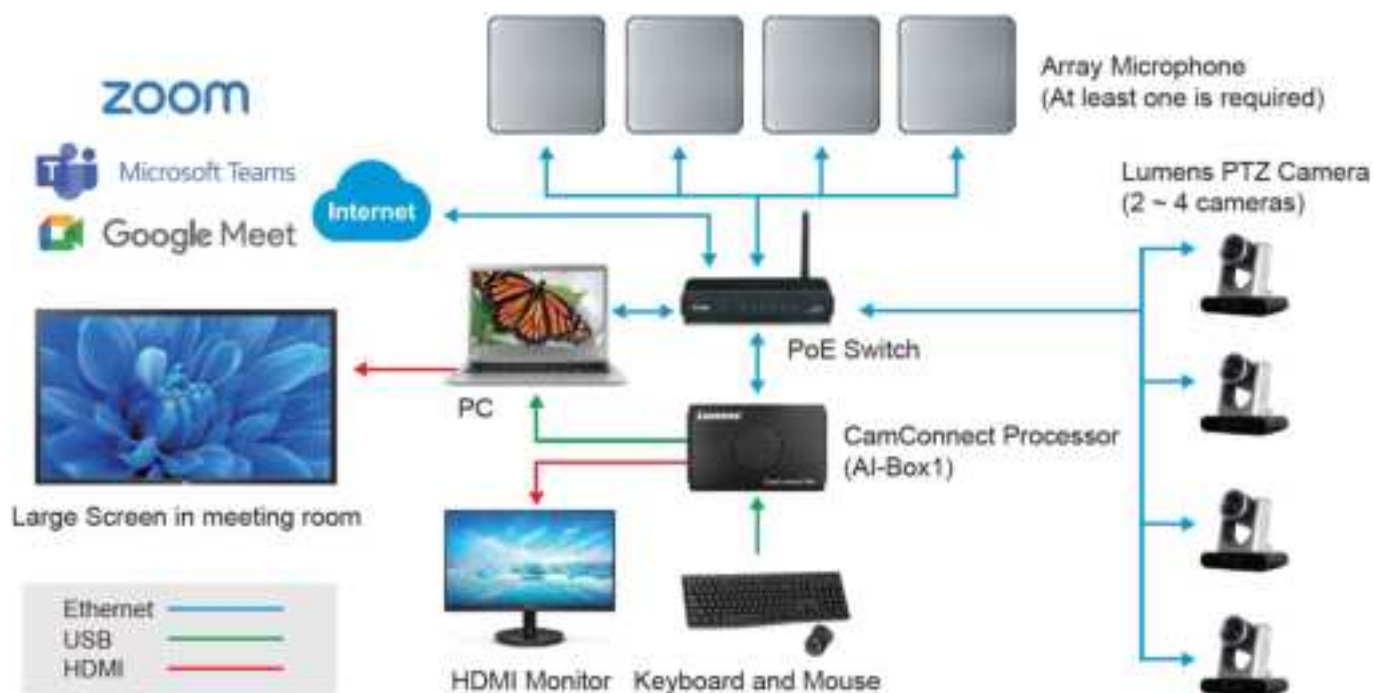
> **To download the latest Quick Start Guide, multilingual user manual, firmware, drivers, and control modules, please visit**
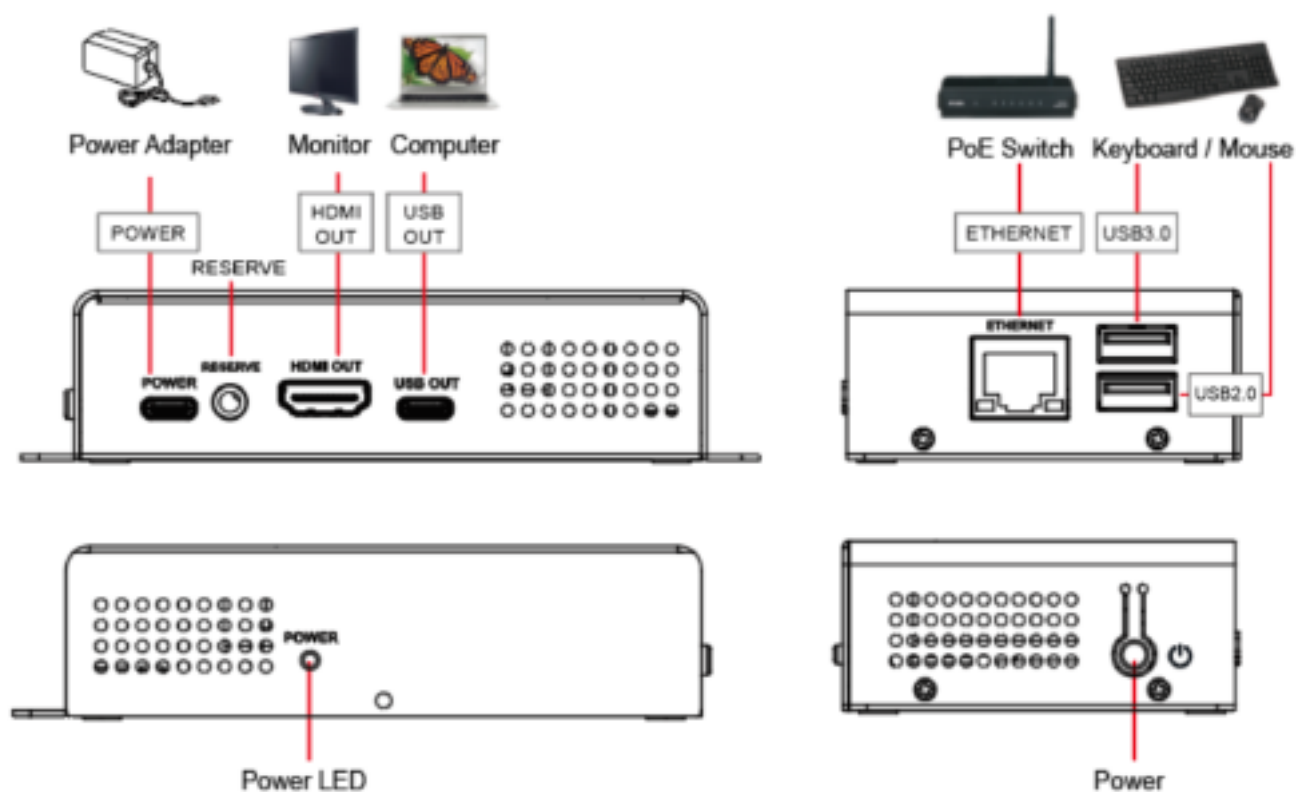> **https://www.MyLumens.com/support**

Table of Contents

Chapter 1 System Connection

1.1 System Connection

1.2 AI-Box1 IO Interface

Chapter 2　Operation Interface

2.1　(A)Device Setting

No	Item	Function Descriptions
1	Device Number	Select the desired number of microphones to connect
2	Device List	Displays microphones in individual tabs
3	Devices	Select Microphone Device More　Please use a supported microphone (see Lumens website)

4	Device IP	Enter the IP address of the microphone
5	Port	Displays the microphone's port ▪ Shure: 2202▪ Shure: 2202 ▪ Sennheiser: 45 ▪ Sennheiser TCCM: 443 ▪ Nureva: 8931 ▪ Yamaha: 49280 ▪ Audio-Technica : 17300 Only Nureva allows customized PORT
6	Connect	Enable/Disable setting mode
7	Voice Tracking	When enabled, signals received by a microphone triggers camera preset positions. When setting camera presets, it is important to disable this function.
8	Audio Trigger Level > dB	Trigger when an audio source exceeds the selected dB value. ▪ Sennheiser:-90~0 (recommended -55) ▪ Nureva:0~120 (recommended 40+) ▪ Audio-Technica:0~60 (recommended 30) ▪ Yamaha:0~126 (recommended 80+ for RM-CG / 70+ for RM-W)
9	Time To Trigger Preset	Audio Reception Delay Settings When a second sound trigger occurs, there will be a delay in triggering camera preset based on the configured duration in seconds.
10	Back To Home Time	Return the camera to its home position If there is no audio input, the camera will move to its home position after the set seconds.
11	Back to Home Camera	Select one camera or select all cameras to move to home position.
12	Back To Home Position	Camera will return to either Home position or a specific preset position.
13	Apply	Confirms changes to settings.

2.2 (B)Camera Control & Status

No	Item	Function Descriptions
1	Resolution / FPS	Resolution/FPS Settings (must match the camera output settings)
2	Refresh / Add	Click ⊕ to search for a camera on the network or manually enter the specified IP, and click **[Add]** to add it

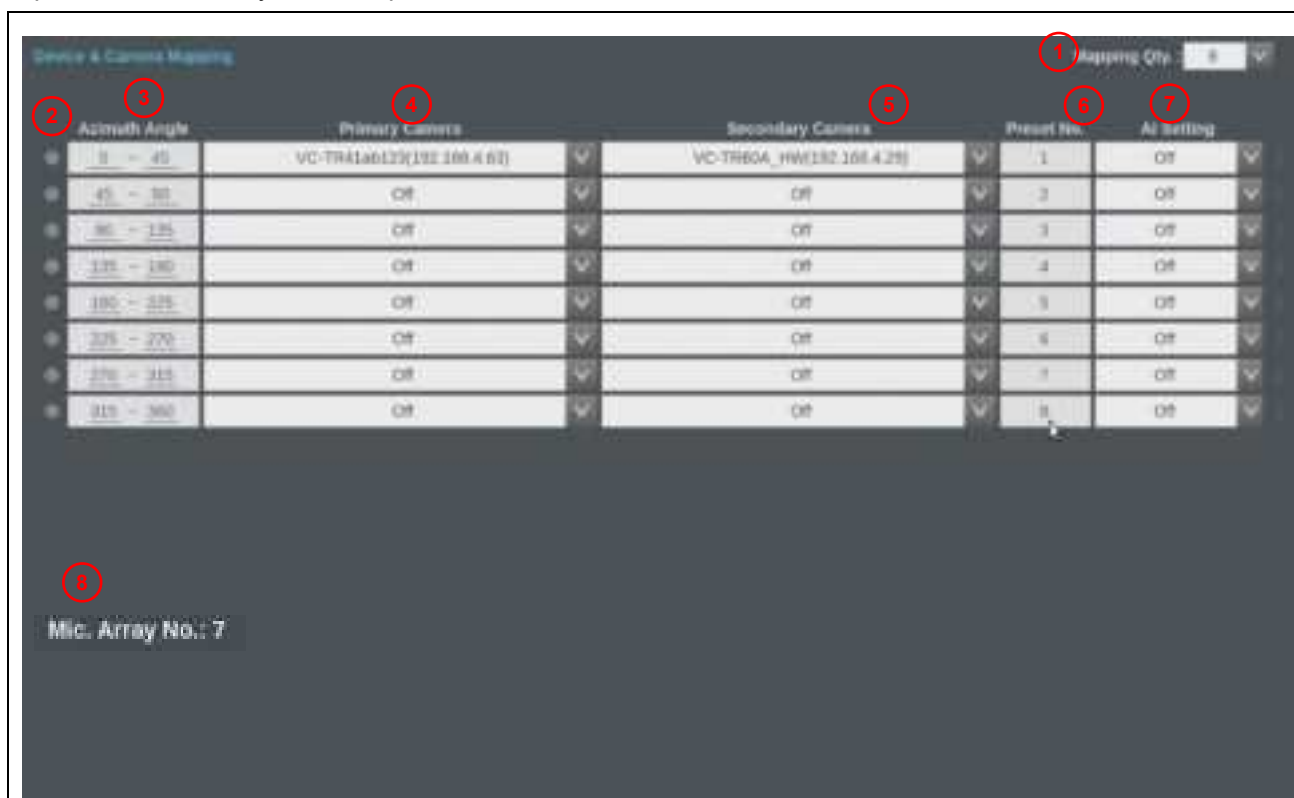| 7		Note Please ensure that the camera and AI-Box1 are on the same network segment.
3	Device Name	Displays discovered cameras
4	Connect	Click to connect. Connected camera are highlighted in blue.
5	PTZ Control	Click to enable PTZ control Refer to **2.2.1 PTZ Control** for function description
6	Delete	Delete a camera from the list.

2.2.1 (C) PTZ Control

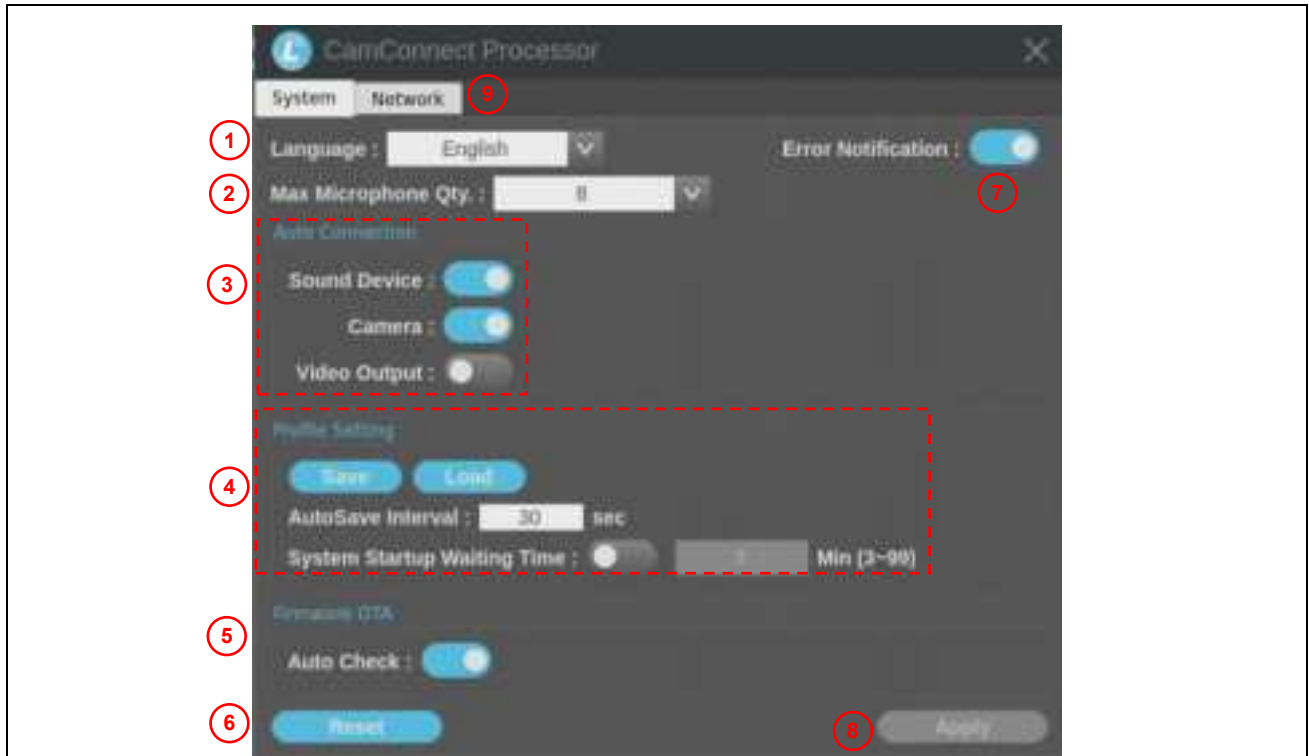| No	Item	Function Descriptions
1	Preview window	Display the camera output
2	Mirror / Flip	Mirror or flip the image
3	Pan/Tilt/Home	Adjust the Pan/Tilt position of the camera Click **[Home]** button to return to the camera's central position
4	Preset setting	▪Call Preset Position： Click a number first and then ▪Store Preset Position： Click a number first and then
5	AF/MF	Switch to Auto/Manual camera lens focus
6	Zoom	Lens Zoom In / Out
7	Exit	Exit the PTZ Control page

2.3 (D)Device & Camera Mapping

When a microphone is connected, the camera will move to a preset position corresponding to the sound position detected by the microphone.

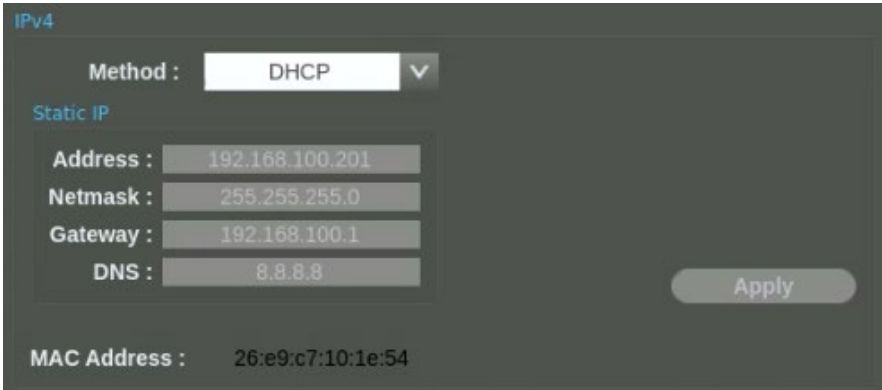| No	Item	Function Descriptions
1	Mapping Qty	Select the number of locations to be mapped. Up-to 128 presets supported. [More] Shure MXA310/ MXA910/ MXA920/ Audio-Technica no supported [More] Not supported with Shure MXA310/ MXA910/ MXA920 and Audio-Technica microphones.
2	Indicator	A green light indicates that the microphone is detecting a sound.
3	Array No. Azimuth Angle	▪ Array No.: Applicable to Shure / Audio-Technica devices ▪ Azimuth Angle: Applicable to Sennheiser, Nureva, and Yamaha devices. Angles can be manually adjusted
4	Primary Camera	Select a desired Primary camera from the dropdown menu. If unable to connect with a previously saved camera, ⚠ will be displayed.
5	Secondary Camera	Select the desired Secondary camera from the dropdown menu. When a camera is triggered to a preset position, and another preset position for the same camera is subsequently triggered, the Secondary camera will be the prior one to move to instead of the primary camera. Note: This feature is available only when Seamless Switching is enabled. If unable to connect with a previously saved camera, ⚠ will be displayed.
6	Preset No.	Select the preset position for the camera from the dropdown menu
7	AI Setting	Enable/Disable AI Tracking ➢ Continuous Tracking：The camera will continuously track the

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		individual, keeping them in the center position.
		➢ Center Stage : When the camera has been triggered to a preset position, the individual will be centered on the screen for 5 seconds before tracking stops.
8	Mic. Array No./ Mic. Azimuth Angle	Displays current trigger position / angle information of the camera.

2.4   (E)System Settings

No	Item	Function Descriptions
1	Language	English
2	Max Microphone Qty.	Connect up-to 24 microphones.
3	Auto Connection	Auto-connected items setting after AI-Box1 power is turned on. ▪ Sound Device ▪ Camera ▪ Video Output
4	Profile Setting	▪ Save/ Load: Save or Load the desired profile. ▪ AutoSave Interval: Set the auto saving interval. ▪ System Startup Waiting Time: Set startup waiting time. After AI-Box1 powers on, it will automatically search for microphones and cameras. If the devices have a long boot-up time, AI-Box1 may not connect to the devices properly. To prevent this issue, please adjust the system waiting time based on the current environment and the boot-up time of the microphones and cameras.
5	Firmware Auto Check	Automatically checks for firmware updates.

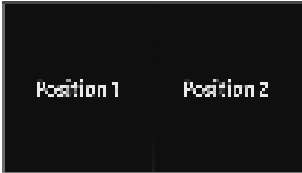| No	Item	Function Descriptions
6	Reset	Resets the CamConnect Pro AI-Box1.
7	Error Notification	Turns on/off error message and notifications.
8	Apply	Confirm and apply settings.
9	Network	Choose either DHCP or Static. The address can be modified in Static mode. Click Apply to save.

2.5 (F)Video Output Settings

No	Item	Function Descriptions
1	Video Output Mode	Set the Output Mode to either UVC, HDMI or UVC+HDMI
2	Video Output Layout	Configure the layout of the video output according to the provided reference in section _2.5.1 Video Output Layout_ ▪ Cross: 4-split screen ▪ PBP: Picture by Picture screen ▪ Crop: Screen cropping function More Choose either Cross/PBP only
3	Seamless Switching	The system is set up for single screen output, and camera switching is triggered by the microphone signal.

4	Source Position	Switch the camera display position, select "[Custom]" and then click on "[Edit]" to enter the editing mode.

2.5.1 Video Output Layout

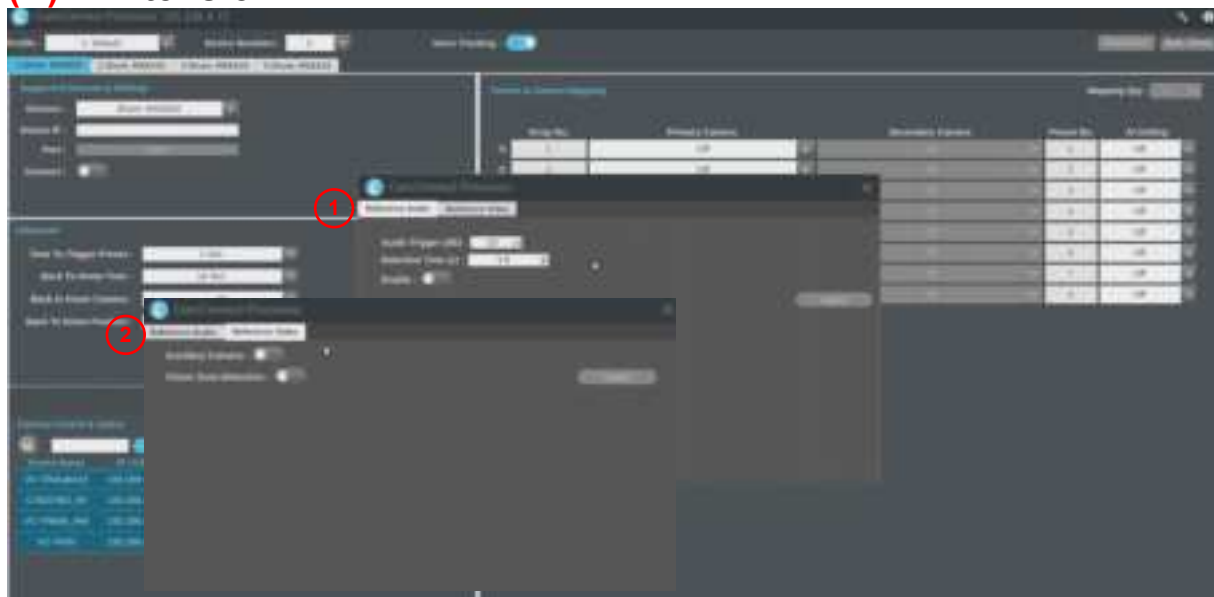|	Connecting with **1** camera	Connecting with **2** cameras	Connecting with **3** cameras	Connecting with **4** camera
Cross				
PBP				

	Crop On	Crop Off
Crop		

2.6   (G)Start Video Output

Click to output camera images via HDMI, UVC or HDMI+UVC.

2.7   (H)   Extension

No	項目	功能說明
1	Reference Audio (The Lumens audio cable splitter is required to enable this function.)	**The problem to address** To ensure that during a conference meeting, the voice from the customer's side will not be detected by the ceiling microphone from our end, which could accidently trigger the camera**.** **Connection:** Connect all devices using the Lumens audio cable splitter. 1. Connect one end (with two rings) to the computer. 2. Connect the other end (with three rings) to the Reserve hole on the CamConnect Pro. 3. The end with a single ring should be connected to the speaker to capture the audio. **Audio Trigger(dB)**: Set the audio detection threshold (-100~0 dB). The microphone will only trigger detection when the volume exceeds the set threshold. **Detective Time(s)**: Set the duration of the detection (0~10 seconds) **Enable**: On / Off **Apply**: Click to apply the settings.
2.	Reference Video (The Lumens BC200	**The problem to address** The camera may be triggered by any sound, whether it is caused by a human or just incidental noise. With the Lumens BC200 auxiliary camera,

camera is required to enable this function.)	the system will no longer be triggered by sound alone. It will also use AI face recognition to detect people on site. The camera will only be triggered when an audio source is accompanied by a human face that can be detected. **Connection:** The Lumens BC200 auxiliary camera must be connected. The BC200 is set to be released in Q1 2025. For a more detailed introduction, please refer to the BC200 user manual at that time. **Auxiliary Camera**: Enable or disable the BC200 camera. **Vision Zone Detection**: This feature is not functional at the moment and is not for use. Apply: Click to apply the settings.	

2.8 (I) Disk Check

Measure the reading from the SD card to check if it is working properly.
The reading data can be provided to Lumens personnel for further inspection.

2.9 (J)Information
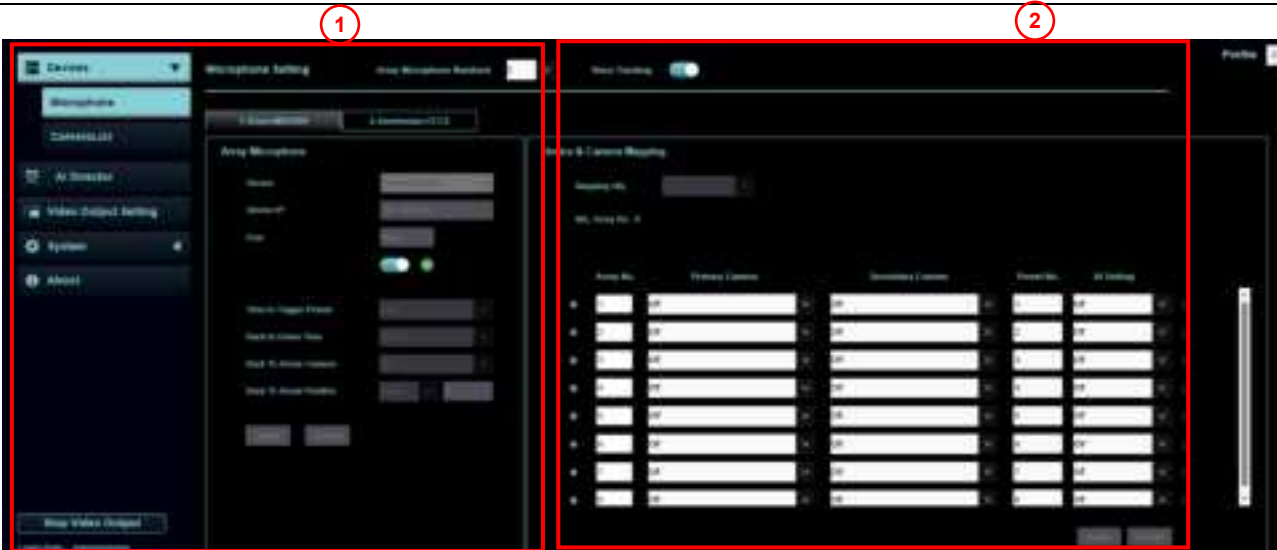

Function Descriptions

This window displays the software version information of AI-Box1. Click on **Check** to confirm the latest version and do apply updates.

For technical support, please scan the QRcode on the right.

Chapter 3 Web Interface

3.1 Device Settings

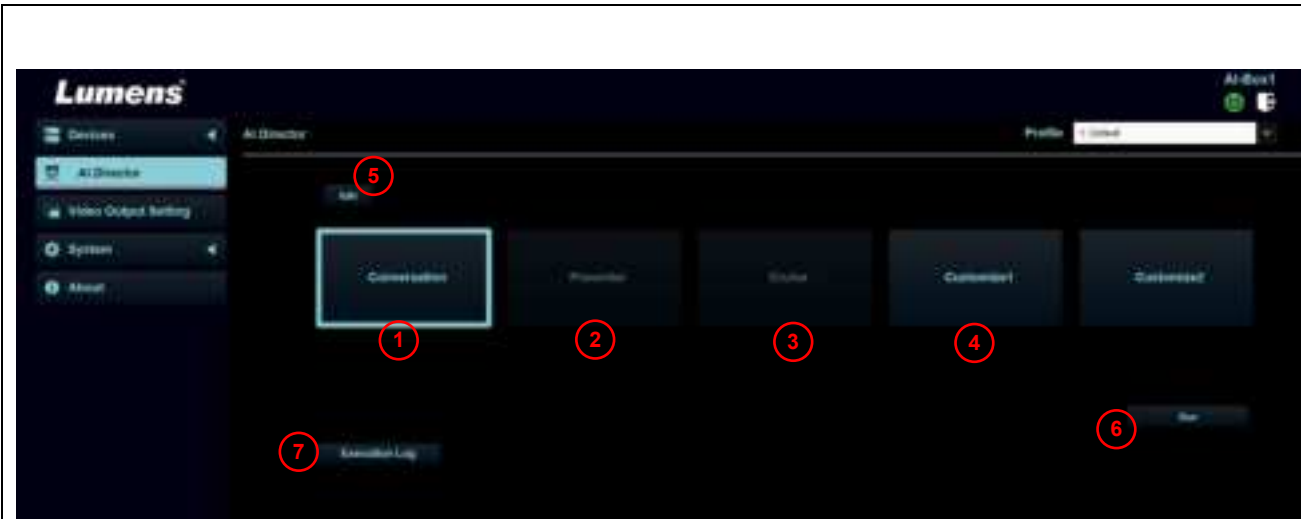| No	Item	Function Descriptions
1	Array Microphone	▪ Array Microphone Number：Select the desired number of microphones to connect ▪ Devices: Select a Microphone ▪ Device IP: Enter the IP address of the microphone ▪ Displays the microphone's port ➤ Shure: 2202 ➤ Sennheiser: 45 ➤ Sennheiser TCCM: 443 ➤ Nureva: 8931 ➤ Yamaha: 49280 ➤ Audio-Technica : 17300 [Note] Only Nureva allows customized PORT ▪ Connect: Enable/Disable microphone connection ▪ Advanced Function Settings

		▪ Audio Trigger Level > dB： Triggered when an audio source exceeds the specified dB value. ➢ Sennheiser:-90~0 (recommended -55) ➢ Nureva:0~120 (recommended 40+) ➢ Audio-Technica:0~60 (recommended 30) ➢ Yamaha:0~126 (recommended 80+ for RM-CG / 70 up for RM-W) ▪ Time To Trigger Preset: Audio Reception Delay Settings When a second sound trigger occurs, there will be a delay in triggering camera preset based on the configured duration in seconds. ▪ Back To Home Time: If there is no audio input, the camera will move to its home position after the set seconds. ▪ Back To Home Position： You can select either the Home position or designate a preset number.
2	Device & Camera mapping	▪ Voice Tracking: When enabled, the microphone can receives signals, and the camera would moves to preset positions when triggered. When setting preset positions, disable this function. Mapping Q'ty: Select the number of locations to be mapped. Up-to 128 presets supported. More Shure MXA310/ MXA910/ MXA920/ Audio-Technica no supported More Not supported with Shure MXA310/ MXA910/ MXA920 and Audio-Technica microphones. ▪ Indicator: a green light indicates that the microphone is detecting a sound. ▪ Array No. / Azimuth Angle： ➢ Array No.: Applicable to Shure/ Audio-Technica devices ➢ Azimuth Angle: Applicable to Sennheiser, Nureva, and Yamaha devices. The angle can be manually adjusted ▪ Primary Camera: Select a Primary camera from the dropdown menu ▪ Secondary Camera: Select a desired Secondary camera from the dropdown menu. When a camera is triggered to a preset position, and another preset position for the same camera is subsequently triggered, the Secondary camera will be the prior one to move to instead of the primary camera. Note: This feature is available only when Seamless Switching is enabled ▪ Preset No.: Select the preset position for the camera from the dropdown menu ▪ AI Setting：Enable / Disable AI tracking ➢ Center Stage：When the camera has been triggered to move to a preset position, the individual will be centered on the screen for 5 seconds before tracking stops. ➢ Continuous Tracking：The camera will continuously track the individual, maintaining them in the center position.

3.2 Device - Camera List

No	項目	功能說明
1	Camera List	Resolution/ FPS： Must match the camera's resolution settings ▪ Refresh ： search the cameras in this network segment. ▪ Add：Manually type the IP address, then click Please ensure that cameras and AI-Box1 are in the same network segment。 ▪ Connect / Disconnect： Click **[Connect]** to enable or disable the connection with the camera. ▪ PTZ Control：Click it to access the camera's webpage. Default account: admin/ 9999 For more information, please refer to the camera's user manual.

3.3 AI Director

No	Item	Function Descriptions
1.	Conversation Mode	Pre-designed scripts are available for selection, allowing customers to use templates without customization. (More templates will be available in the future)
2	Presenter Mode	Not available for now.

3	Cruise Mode	Not available for now.
4	Customize	Create and fully customize your own 2 unique scripts.
5	Edit	Edit the contents of the script
6	Run / Stop	Start or stop the script running.
7	Execution Log	Display the log activity of AI Director.

Example of script creation

Script Edition: Conversation Mode Example

A. Camera: Assign commands for connected cameras to move to a preset position or return to their home position.

B. Microphone:

1.trigger count: Set the number of triggers (1~100) required to activate the camera.

2. All Mic off Stream: Define the action CamConnect Pro will take when the microphone stops receiving sound. For example, change the image layout scene or send commands to cameras.

(See example below)

C. Layout:

1. Video Layout: Cross / PBP

2. Video Layout of camera quantity: 1x1 / 1x2 / 1x3 / 2x2

3. Video source to specific position

D. Control

    1. Script Start:

        a.This block must be placed at the beginning of any valid script.

        b.Set the priority to determine which script takes precedence when multiple scripts are active.

    2. Script End: This block must be placed at the end of any valid script

    3. Delay time: milliseconds / seconds / minutes

        a. Set the custom time and select the units.

        b. This block can be used as a stopover point in a script.

    Example:
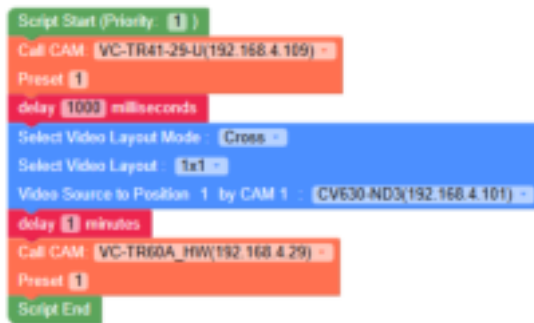
Note: A valid script must always include both the Script Start block and Script End block.

E. Leave: Exit the page

F. Save: Save the settings

G. Run: Start executing the script

H. Bin: Drag unwanted blocks to the bin icon to discard them.

I. Execution Log: Displays the activity log of the AI Director.

Script edition: Customize Mode example

A. Camera

    1. Preset Cruise

        Set how the preset positions of 2–3 cameras are triggered in sequence

        Mode 1: Assign one preset position for each camera. Each camera moves to its preset position in

        order.

Mode 2: Assign two preset positions for each camera. Each camera move to their preset positions in order.

Configurable value: 1. Movement speed (degrees per second) for the camera when the preset position is triggered.

2. Delay time(seconds)

2. Camera settings

a. Move to a specific preset position or home position

b. Movement speed (degrees per second) for the camera when the preset position is triggered.

B. Layout

1. Layout: Cross / PBP

2. Video Layout for Camera Quantity: 1x1 / 1x2 / 1x3 / 2x2

3. Video source to specific position

C. Control

1. Script Start:

a.This block must be placed at the beginning of any valid script.

b.Set the priority to determine which script takes precedence when multiple script are active.

2. Script End: This block must be placed at the end of any valid script.

3. Delay time: milliseconds / seconds / minutes

a. Set the custom time and select the units.

b. This block can be used as a stopover point in a script.

4. Reschduled in _ seconds: Specify how many seconds will be needed before triggering the next step.

5. Repeat Count: How many times the scrpt will repeat

6. Script stop: Stops the script execution.
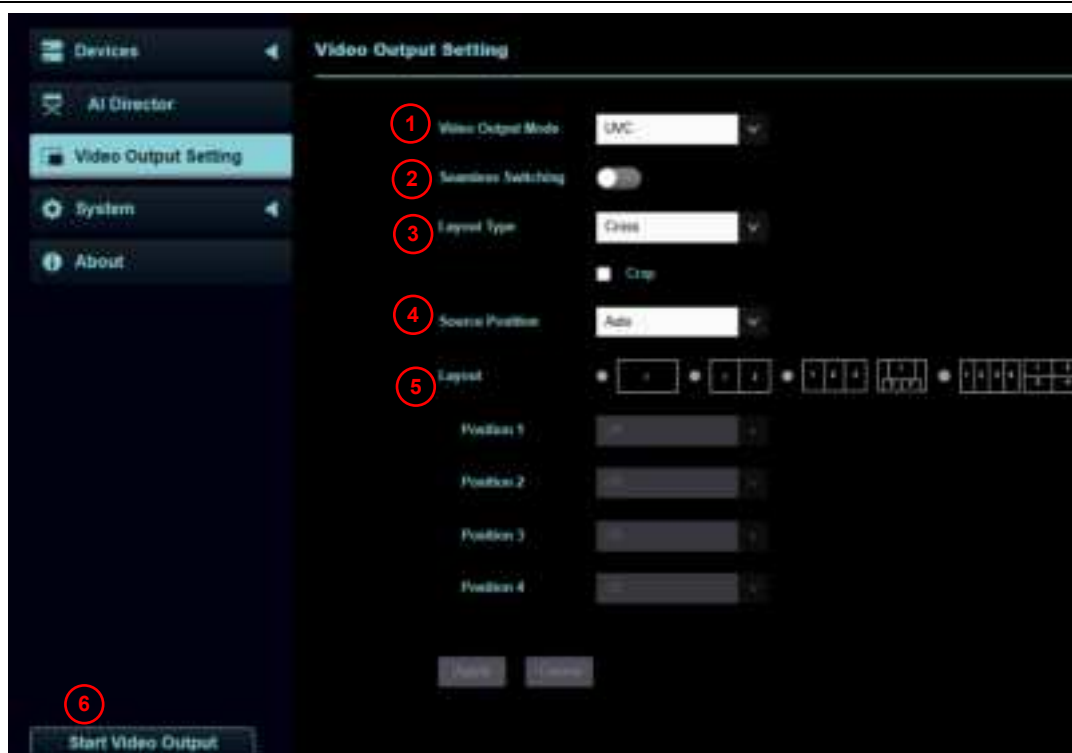
7. Loop Script: The script will repeat continuously.

Example:

Note: A valid script must always include both the Script Start and Script End blocks.

D. Leave: Exit the page

E. Save: Save the settings

F. Run: Start executing the script

G. Bin: Drag unwanted blocks to the bin icon to discard them.

H. Execution Log: Display the activity log of AI Director.

3.4 Video Output Settings

No	Item	Function Descriptions
1	Video Output Mode	HDMI,UVC or HDMI+UVC
2	Seamless Switching	The system is set up for single screen output, and the camera switching is triggered by the microphone signal.
3	Layout Type	Configure the layout of the video output according to the provided reference in section *2.5.1 Video Output Layout* ▪ Cross: 4-split screen ▪ PBP: Picture by Picture screen ▪ Crop: Screen cropping function [None] Choose either Cross/PBP only
4	Source Position	Custom / Auto
5	Layout	Choose how many camera images will be displayed on the screen. Position: Determine which camera source will be displayed in each position
6	Start Video Output	Click the button to start or stop video output.

## 3.5 System- Network

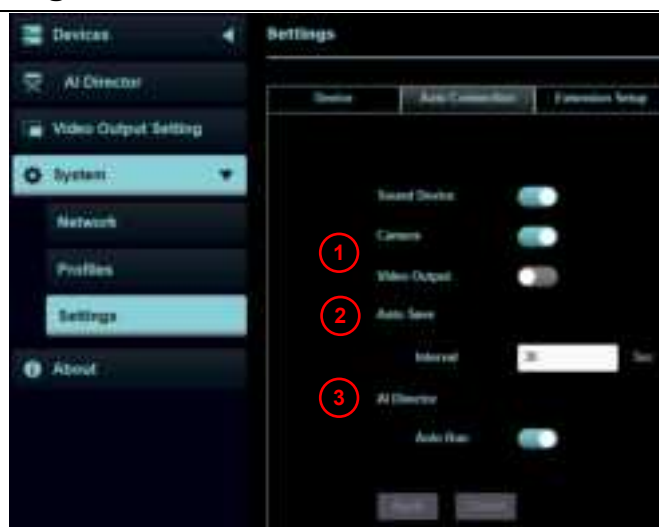| Function Descriptions |
| --- |
| Ethernet Settings. When it is set to Static IP, settings can be modified. Once the settings are complete, click Apply. |

3.6 System- Profile

No	Item	Function Descriptions
1	Save as New Profile	Save the current settings as a new profile / layout template.
2	Load Profile	Load a saved profile / layout template.
3	Profile	The button will appear on every page and serves the same function as Load Profile.

3.6.1 System- Settings-Device
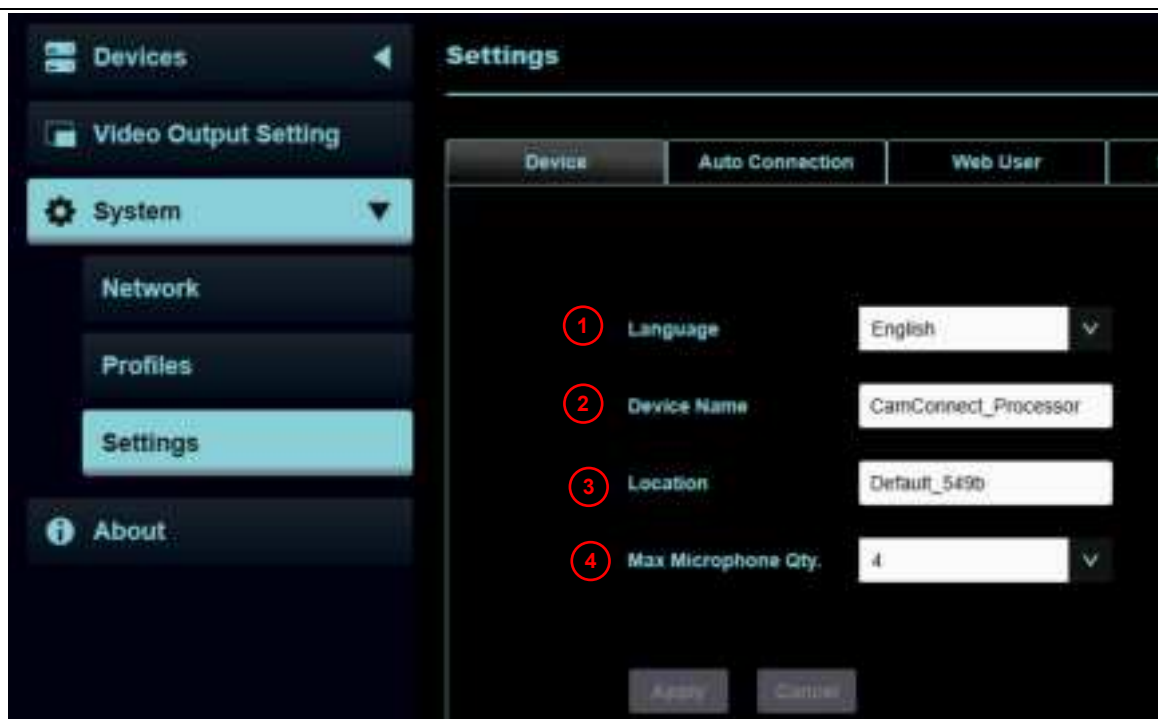
No	Item	Function Descriptions
1	Language	English
2	Device Name	CamConnect_Processor
3	Location	Default_XXXX (The last four characters of the MAC address)
4	Max Microphone Qty.	4 / 8 / 16 / 24

3.6.2 System- Settings- Auto Connection

No	Item	Function Descriptions
1	Auto Connection	The microphone, camera and Video output can reconnect automatically after restarting the AI Box.

2	Auto Save	The profile can be saved automatically after a specific interval time.
3.	Auto Run	AI Director will be run automatically.

3.6.3 Extension Setup

| No	項目	功能說明
1	Reference Video (The Lumens BC200 camera is required to enable this function.)	**The problem to address** The camera may be triggered by any sound, whether it is caused by a human or just incidental noise. With the Lumens BC200 auxiliary camera, the system will no longer be triggered by sound alone. It will also use AI face recognition to detect people on site. The camera will only be triggered when an audio source is accompanied by a human face that can be detected. **Connection:** The Lumens BC200 auxiliary camera must be connected. The BC200 is set to be released in Q1 2025. For a more detailed introduction, please refer to the BC200 user manual at that time. **Auxiliary Camera**: Enable or disable the BC200 camera. **Vision Zone Detection**: This feature is not functional at the moment and is not for use. **Apply**: Click to apply the settings
2	Reference Audio (The Lumens audio cable splitter is required to enable this function.)	**The problem to address** To ensure that during a conference meeting, the voice from the customer's side will not be detected by the ceiling microphone from our end, which could accidently trigger the camera. **Connection:** Connect all devices using the Lumens audio cable splitter. 1. Connect one end (with two rings) to the computer. 2. Connect the other end (with three rings) to the Reserve hole on the CamConnect Pro.

| | | 3. The end with a single ring should be connected to the speaker to capture the audio.

Audio Trigger(dB): Set the audio detection threshold (-100~0 dB). The microphone will only trigger detection when the volume exceeds the set threshold.
Detective Time(s): Set the duration of the detection (0~10 seconds)
Enable: On / Off
Apply: Click to apply the settings. |

3.6.4 System Settings: Web User
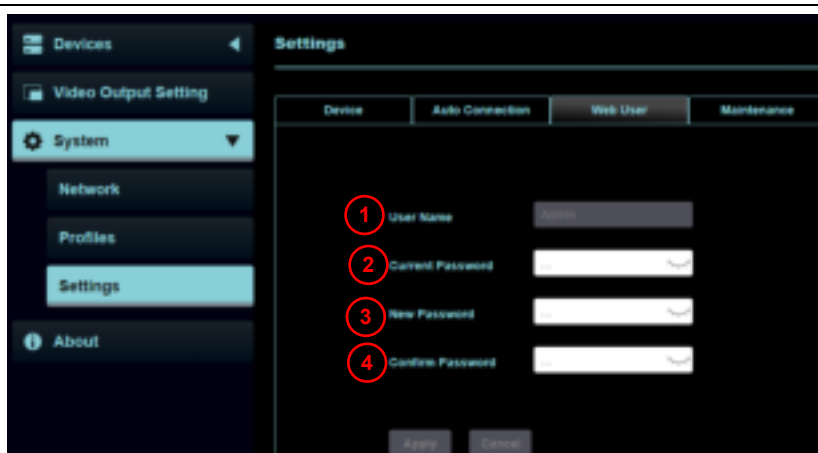
No	Item	Function Descriptions
1	User Name	Admin
2	Current Password	The password currently set for your account.
3	New Password	Enter a new password.
4	Confirm Password	Re-enter your new password to confirm.

3.6.5 System- Settings- Maintenance
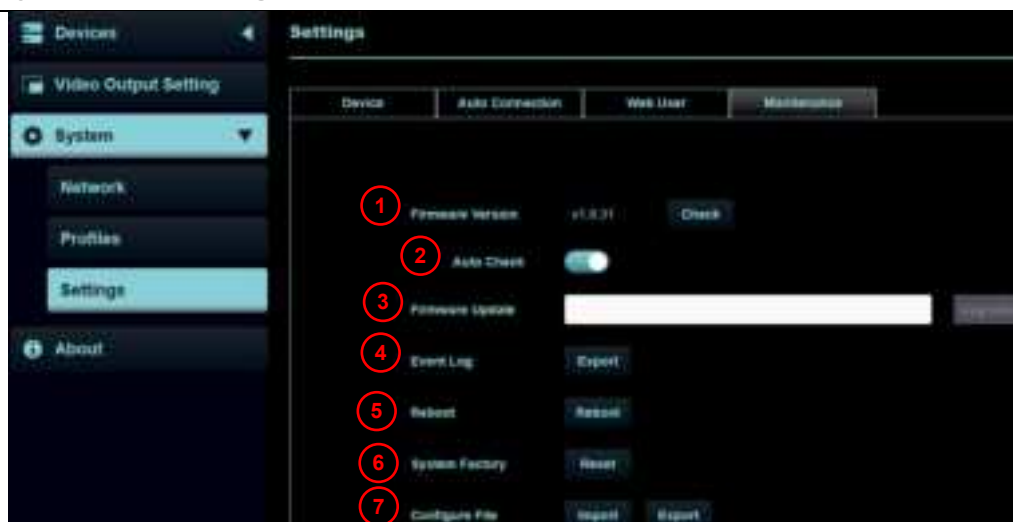
No	Item	Function Descriptions
1	Firmware Version	Displays the current firmware version of the device.
2	Auto Check	Automatically checks if new firmware is available.
3	Firmware Update	Allows you to select and update a firmware file from your computer.
4	Event Log	The log file records activity over time and can be exported.
5	Reboot	Restarts the device.
6	System Factory	Resets the device to its factory default settings.
7	Configure File	Import /Export the current configuration.

3.7 About

Function Descriptions
This window displays the version information of AI-Box1. For technical support, please scan the QR code at the bottom right

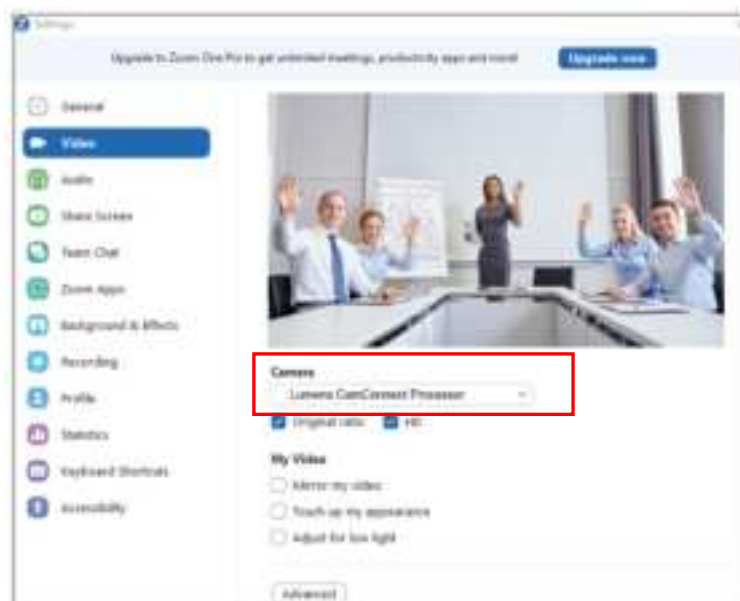# Chapter 4 Connect to video conferencing software

4.1   Set the output mode of AI-Box1 to UVC or HDMI+UVC, then click the
       Video output button

4.2   Launch software (such as Skype, Zoom or Microsoft Teams)

4.3   Select CamConnect as the video source

   ▪ Video Source Name: Lumens CamConnect Processor

Chatper 5 Microphone Settings

Please check the latest list of supported microphones on the Lumens website.

Below are examples. Compatibility is not limited to these microphones.

Before installing AI-Box1, third-party microphone systems may require configuration.

5.1 Sennheiser

When using TCC2 with CamConnect, set and configure the channels on the Sennheiser Control Cockpit software first. By default, Sennheiser divide a space into 8 equal parts in a horizontal angle of view. They correspond to CamConnect Azimuth Angle 1 to 8.
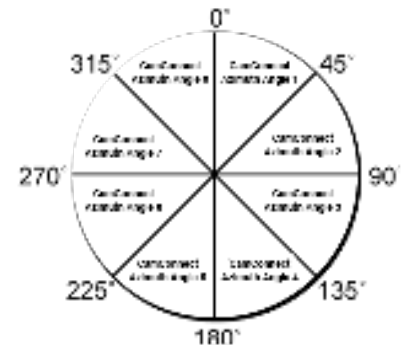
If a blocked area is enabled on the Sennheiser Control Cockpit software, the corresponding position of CamConnect will also be affected. Example: If the blocked area is set to 0° to 60°, the audio signal from 0° to 45° of CamConnect Array Azimuth 1 and 45° to 60° of Array Azimuth 2 will be ignored.

5.2 Shure

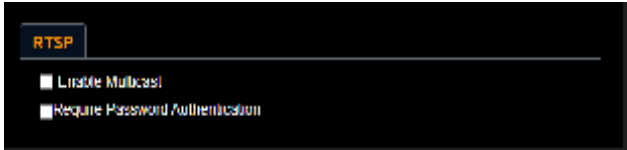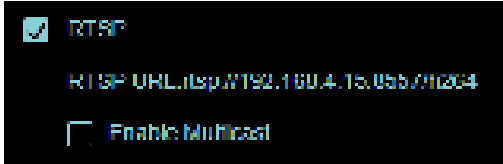Suitable for large-area positioning when Shure Designer Automatic coverage is On.
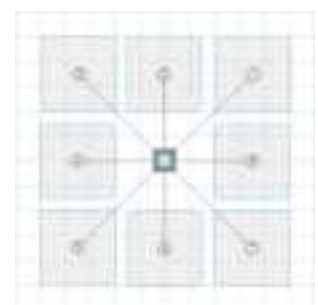
If more accurate positioning is required, disable Automatic coverage, adjust Gain value/Position manually and reduce the beamforming angle, to achieve accurate positioning.

Chapter 6 Troubleshooting

This chapter describes problems you may encounter while using AI-Box1. If a problem still occurs, please contact your distributor or the service center.

NO	Problems	Solutions
1.	Unable to search camera devices	1. Check the power supply of camera or PoE power supply is stable. 2. Make sure the cameras are on the same network as the CamConnect AI-Box1. 3. Replace the cables and make sure they are not faulty
2.	The microphone fails to detect the position of a sound	Please confirm that the microphone device is in Connected status
3.	When using a Sennheiser microphone, there is no response at a specific angle	1. Make sure the Azimuth Angle settings in the CamConnect software include that angle position 2. Check the blocked zones in the Sennheiser Control Cockpit software. Refer to **5 Microphone Settings** for details.
4.	When setting camera preset positions, the camera moves when it hears a sound from another direction.	Please refer to **2.1 Device Setting** to disable voice tracking during the camera set-up process.
5.	Unable to connect camera.	Please access the camera's web interface and go to the Network tab. Make sure Multicast is disabled. When Multicast is opened, the AI-Box1 cannot connect the camera.
6.	Cannot upgrade firmware by OTA.	1. Please check if you are using static IP. Turn to DHCP and try update again.

Chapter7 System Message

No	Warning message	Action
1	Microphone cannot be found. Please check Microphone connection status and try to connect again.	Ensure that the microphone's port has been typed correctly and check if the IP address is on the same network as the AI-Box. You can also refer to the link below from for more information about the setup method with compatible ceiling microphones. https://www.mylumens.com/en/Downloads/3?id2=5&keyword=ai%20box&keyword2=&pageSize=10&ord=
2	Connection Loss.	The connection between the AI-box and the microphone has been lost. Please check if the microphone has been accidentally turned off or if there is another network issue. Refer to *3.1 Device - Microphone Setting* to check the microphone's status.
3	Camera connection failure	Check if the camera's resolution and FPS have been configured correctly with the AI Box. Access the camera's webpage to confirm its network connectivity. Refer to *3.2 Device - Camera List* to check resolution of AI-Box1.

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