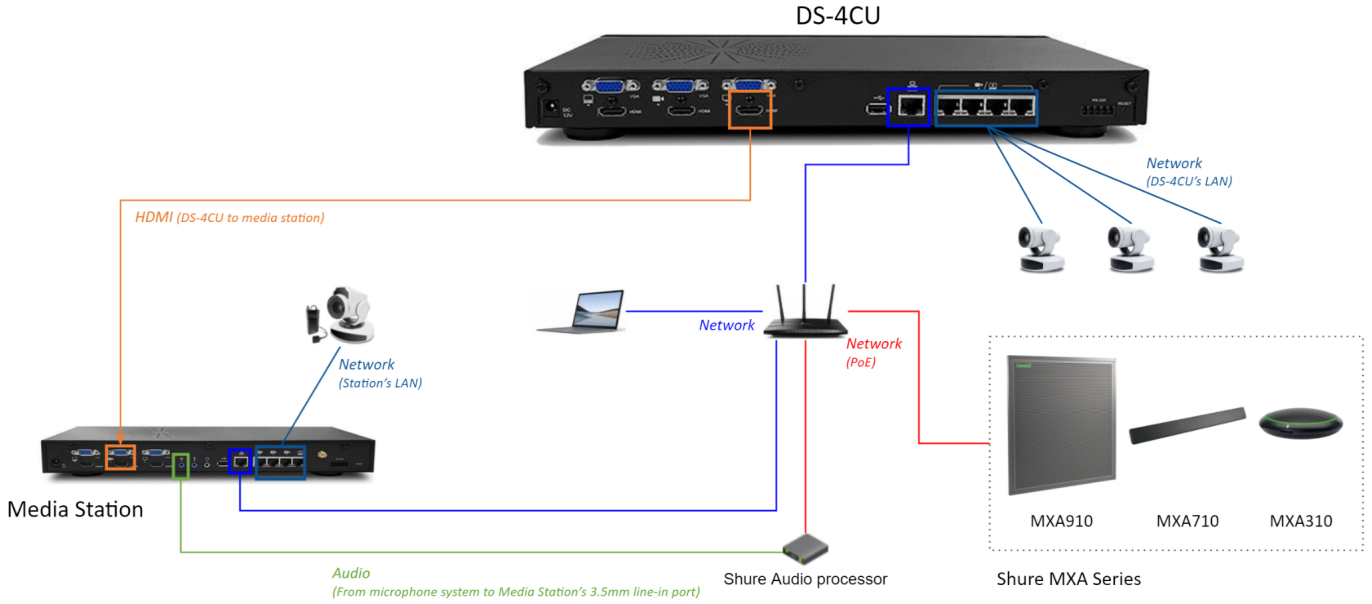# Speaker Tracking System

DS-4CU

Description

DS-4CU is a device that helps to communicate between the microphone system and PTZ camera to provide a close-up view of the active speaker in a meeting/conference room.

It synchronizes the microphone system's status(active microphones' ID) and controls the camera to move to the corresponded speaker by the preset position with the preferred layout, overlay, and background.

When paired with an AREC media station, It could also control the station's theme when a microphone is activated/deactivated.

Installation

Connection

DS-4CU

HDMI (DS-4CU to media station)

Network
(DS-4CU's LAN)

Media Station

Network
(Station's LAN)

Network

Network
(PoE)

Audio
(From microphone system to Media Station's 3.5mm line-in port)

Shure Audio processor

MXA910   MXA710   MXA310

Shure MXA Series

Configuration

Video Inputs - Camera Setup

DS-4CU supports cameras with different video output interfaces (**HDMI** / **VGA** / **Network cameras**(ONVIF protocol) / IP streams: **RTSP**(Network Cameras) / **RTMP** / **RTP**).
The following guide gives an example of the commonly used ONVIF protocol of network cameras.

Register Camera

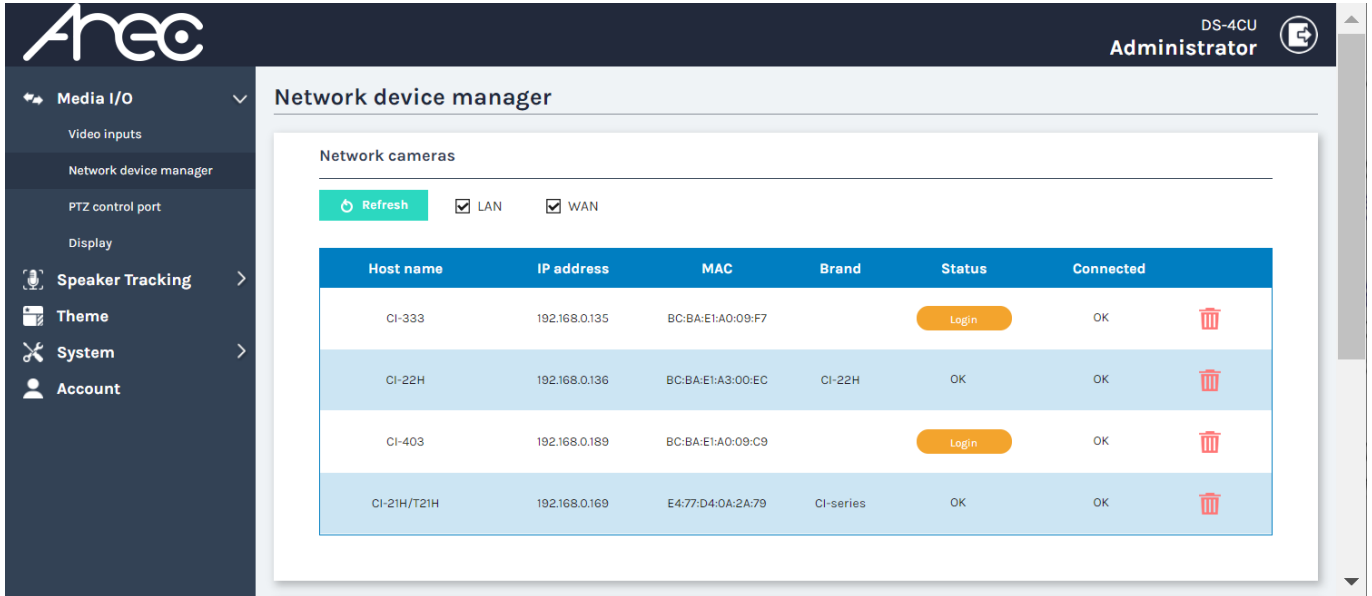1. Make sure the cameras are correctly connected. And go to DS-4CU web Admin page → Media I/O → Network device manage → Network cameras

2. Click **⟳ Refresh**
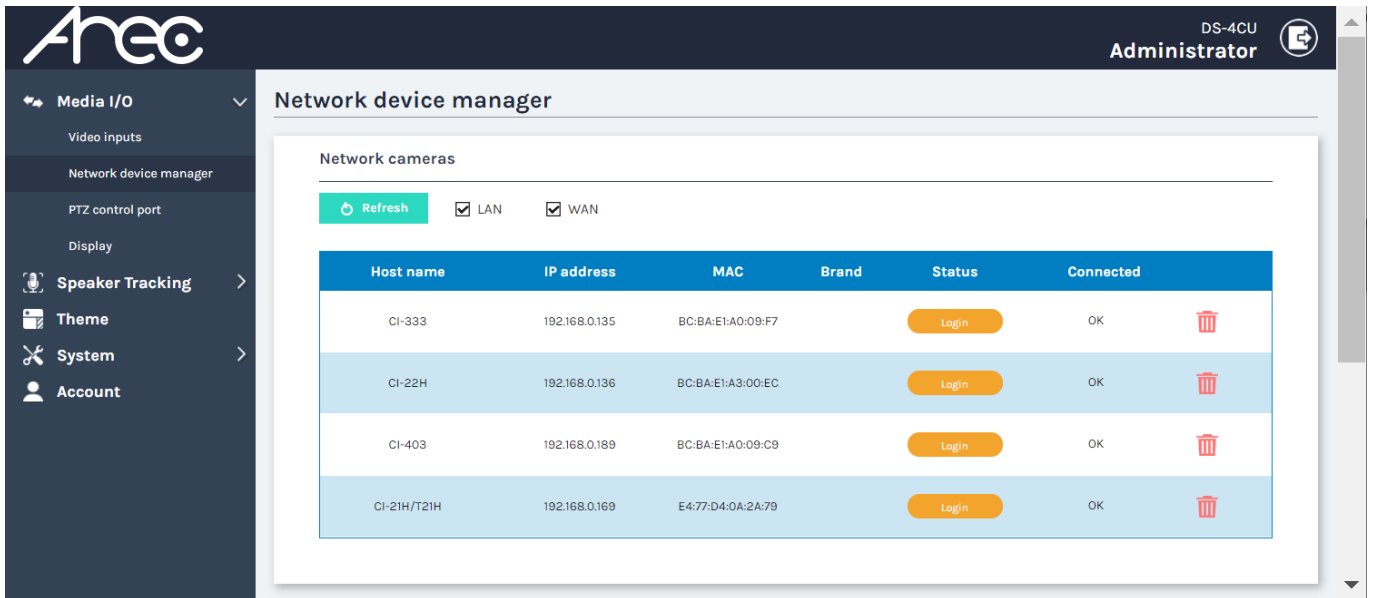
3. Click **Login**, insert the username and password, and click **Authentication** to register the camera
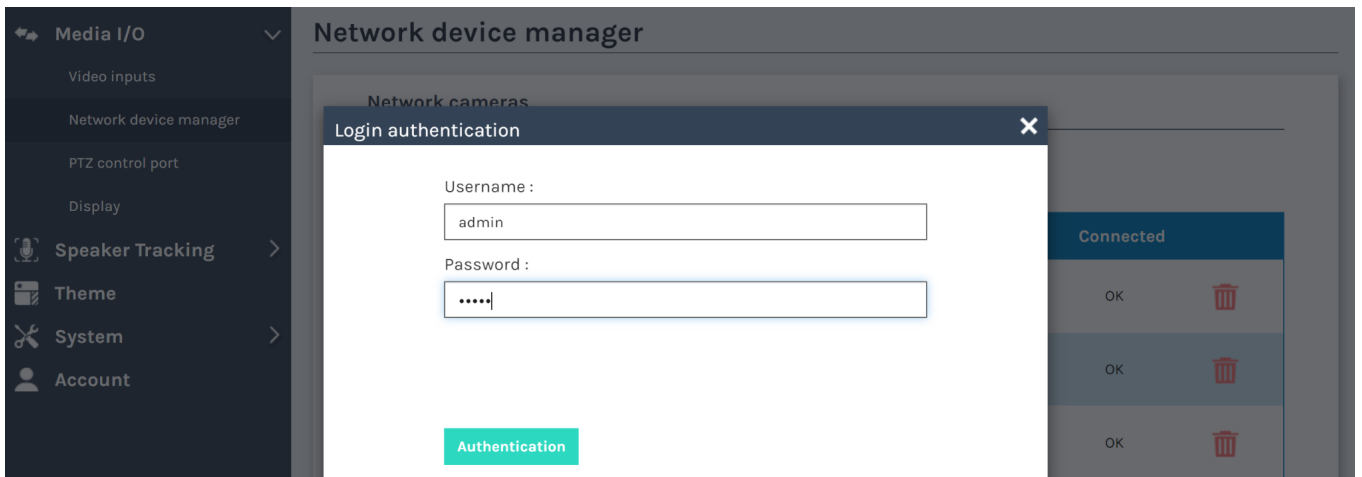
4. Repeat the last step if more cameras are needed

*Note: If your camera doesn't support Onvif protocol, it cannot be found by camera search on DS4CU. Please go to the Video input page and select "Signal type" to "Encoder" in the "Video Inputs" and fill in the stream URL of your camera.

**Note: DS-4CU supports IP stream profile: H264, 1920x1080, 30 FPS, Bitrate 4Mbps.

Assign cameras to video inputs

DS-4CU could be connected to up to 4 video input sources; they could be either HDMI/VGA/IP camera/encoder(stream sources: RTP/RTSP/RTMP).
Note: HDMI/VGA only available in 1st and 2nd Video input

1. Go to web admin → Media I/O → Video inputs.

2. In the preferred video input section,
   (1) select "Network Camera" in Signal type,
   (2) select the IP address of the camera,
   (3) select "over IP (ONVIF)" for PTZ control,
   (4) and click **Apply**
   Repeat the steps above to add all necessary cameras.

Connect to the microphone system

1. Retrieve the Shure's Microphone's IP. For different Shure series:
   - MXA Series:
     The IP of **MXA910** / **MXA710** / **MXA310**
   - MXCW Series:
     The IP of the APT(Access Point Transceiver), which is **MXCWAPT**
   - MXW Series:
     The IP of the APT(Access Point Transceiver), which is either an **MXWAPT8**, **MXWAPT4**, or **MXWAPT2**.

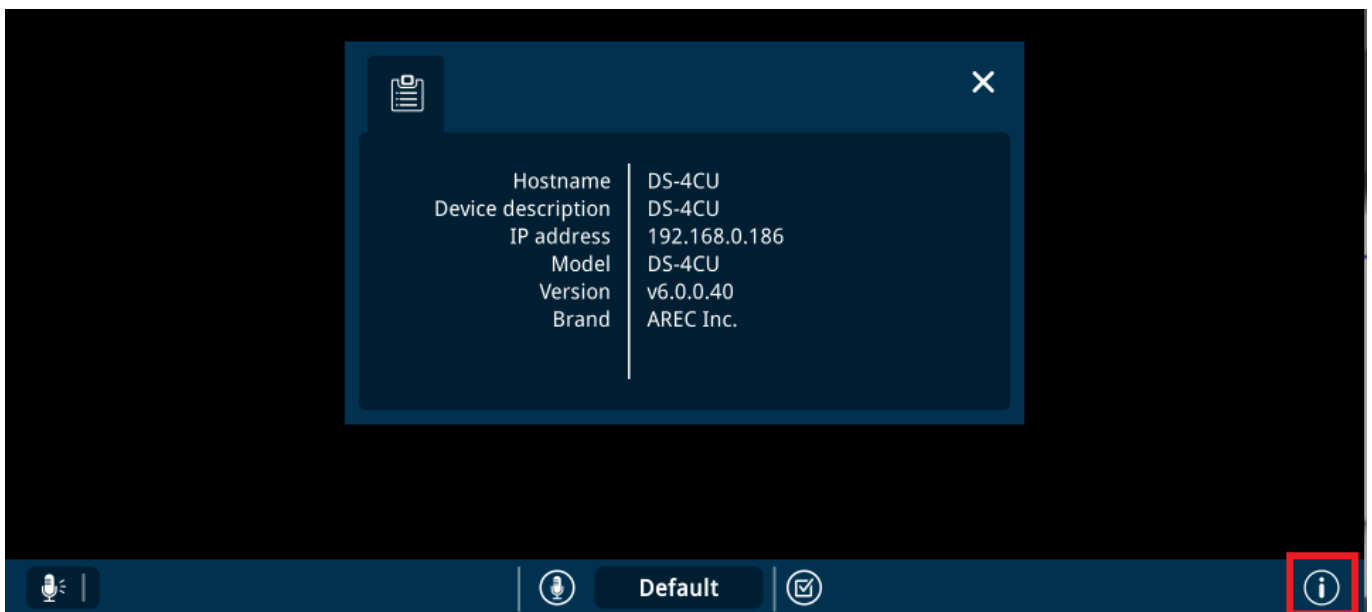2. Go to DS-4CU's web Admin page → Speaker Tracking → Control settings
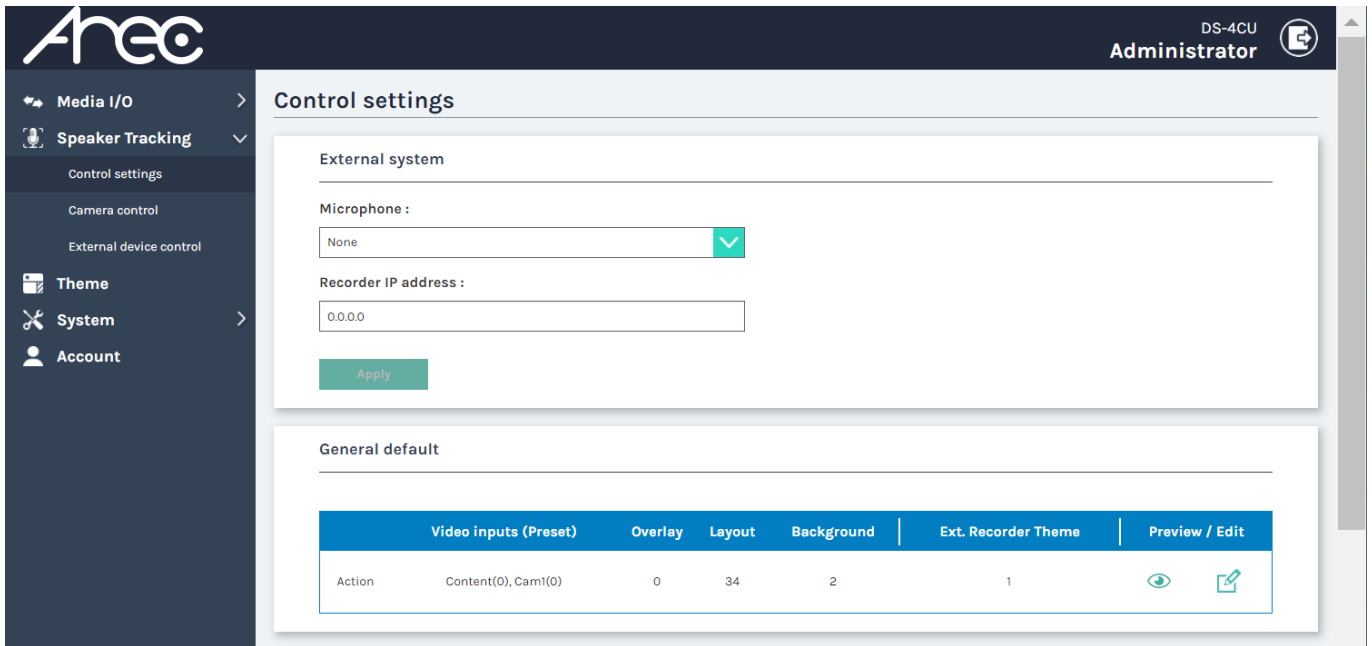
3. Find the External system section and select the corresponding microphone.
   Insert the microphone system's IP and click Apply.
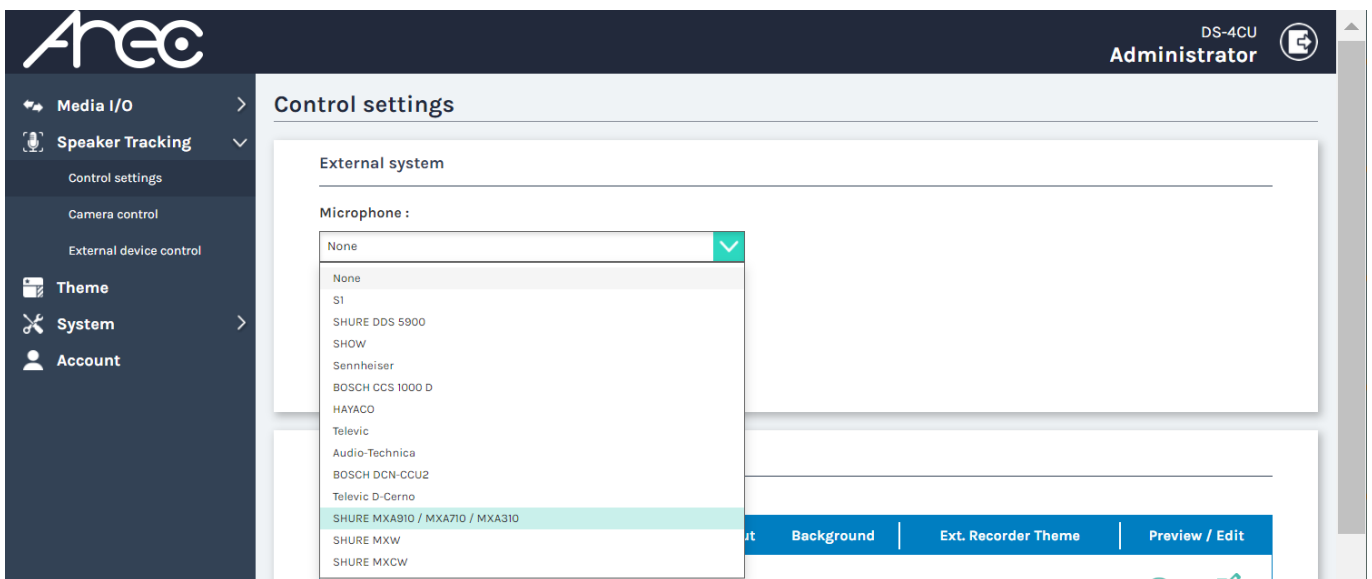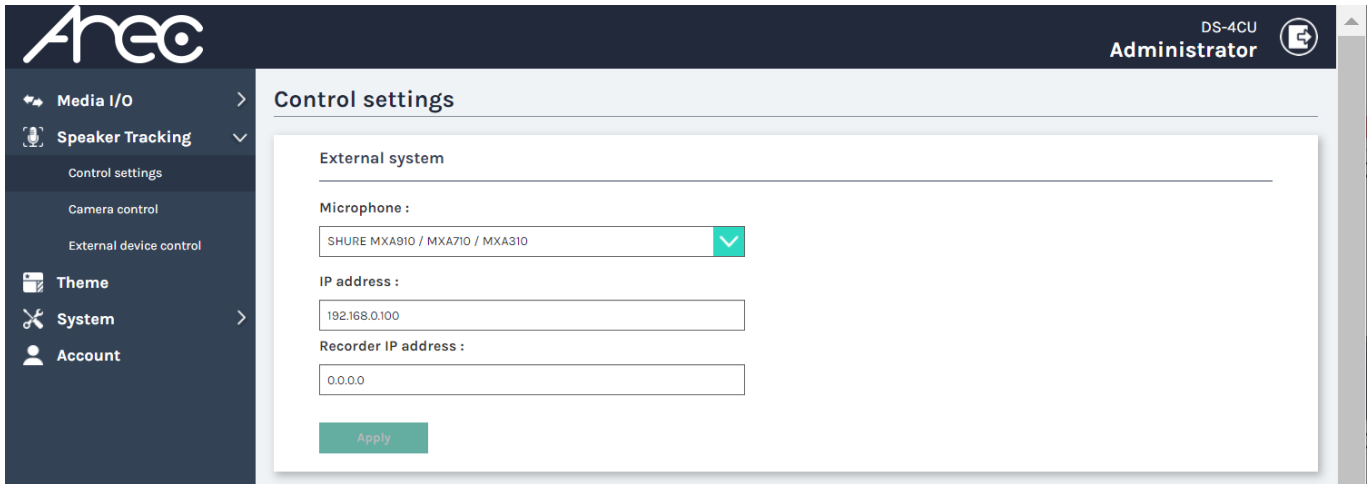
4. Go to the display's graphic user interface and click the Info button in the bottom-right corner.

5. To ensure the connection between DS-4CU and the microphone was successfully set, activate any microphone to see if any string was shown like the image below.
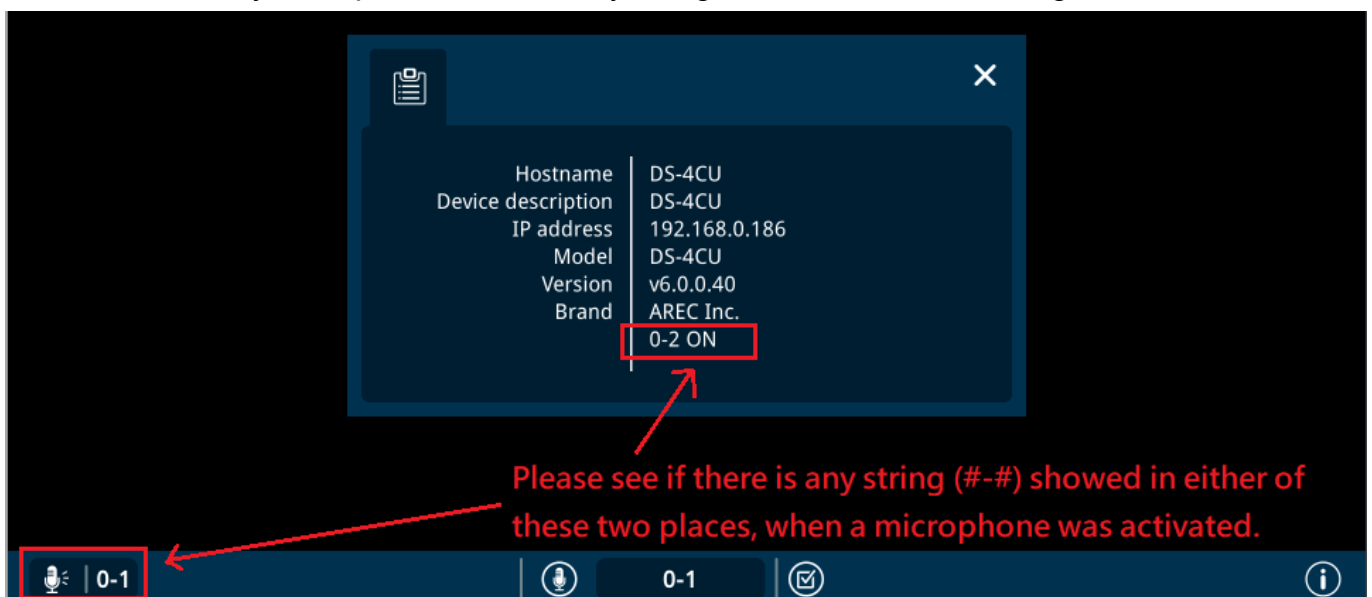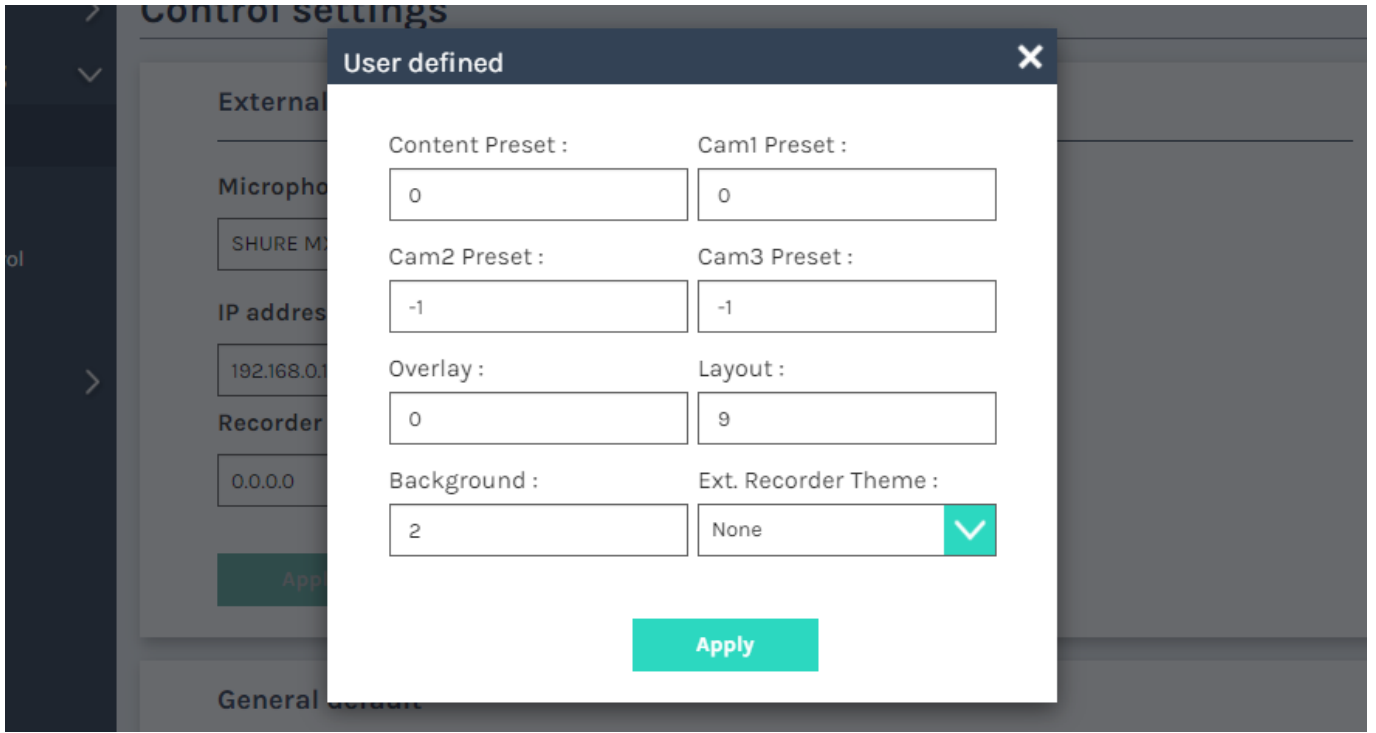
Control settings - General default

This configuration defines how the image should be displayed when there is no microphone activated.

1. Go to DS-4CU's web Admin page → Speaker Tracking → Control settings, and find the **General default**
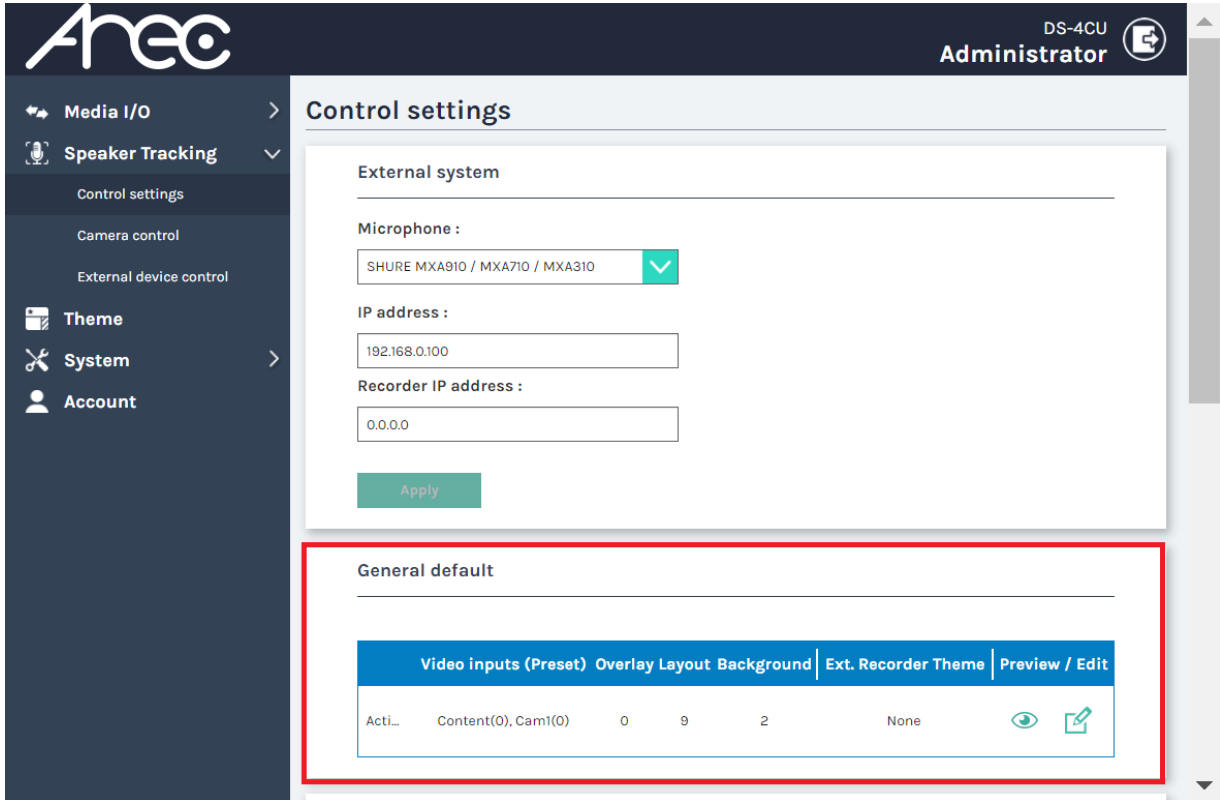
2. Click the edit button to edit the theme of general default(no microphone activated). And click [Apply].

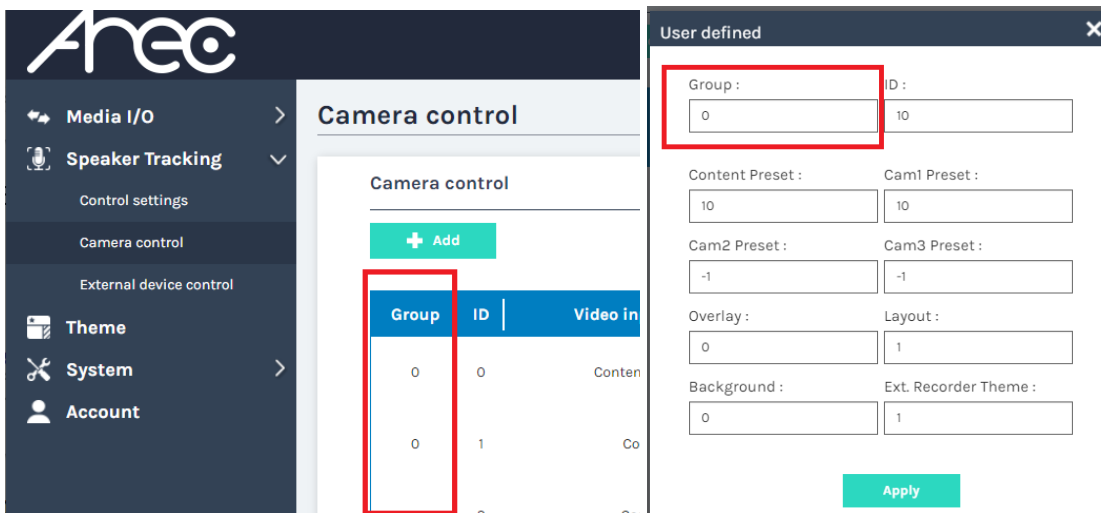| Parameter	Description	Range
Content Preset	Preset Position of the camera that set as **1st video input** source	-1 ~ 255, -1 = OFF
Cam1 Preset	Preset Position of the camera that set as **2nd video input** source	-1 ~ 255, -1 = OFF
Cam2 Preset	Preset Position of the camera that set as **3rd video input** source	-1 ~ 255, -1 = OFF
Cam3 Preset	Preset Position of the camera that set as **4th video input** source	-1 ~ 255, -1 = OFF
Overlay	Overlay ID	0 ~ 255, 0 = no overlay
Layout	Layout ID	1 ~ 255
Background	Background ID	0 ~ 255, 0 = no background
Ext. Recorder Theme	Paired AREC media station Theme ID	as the drop-down list defines *Auto: DS-4CU saves the last theme ID of the media station before any microphone is activated, and returns to this theme when all mics are OFF.

User defined

Content Preset :

0

Cam1 Preset :

0

Cam2 Preset :

-1

Cam3 Preset :

-1

Overlay :

0

Layout :

9

Background :

2

Ext. Recorder Theme :

None

Apply

3. Click 👁 to preview the theme setting

Camera Control

This configuration defines how the image should be displayed when a single microphone is activated.
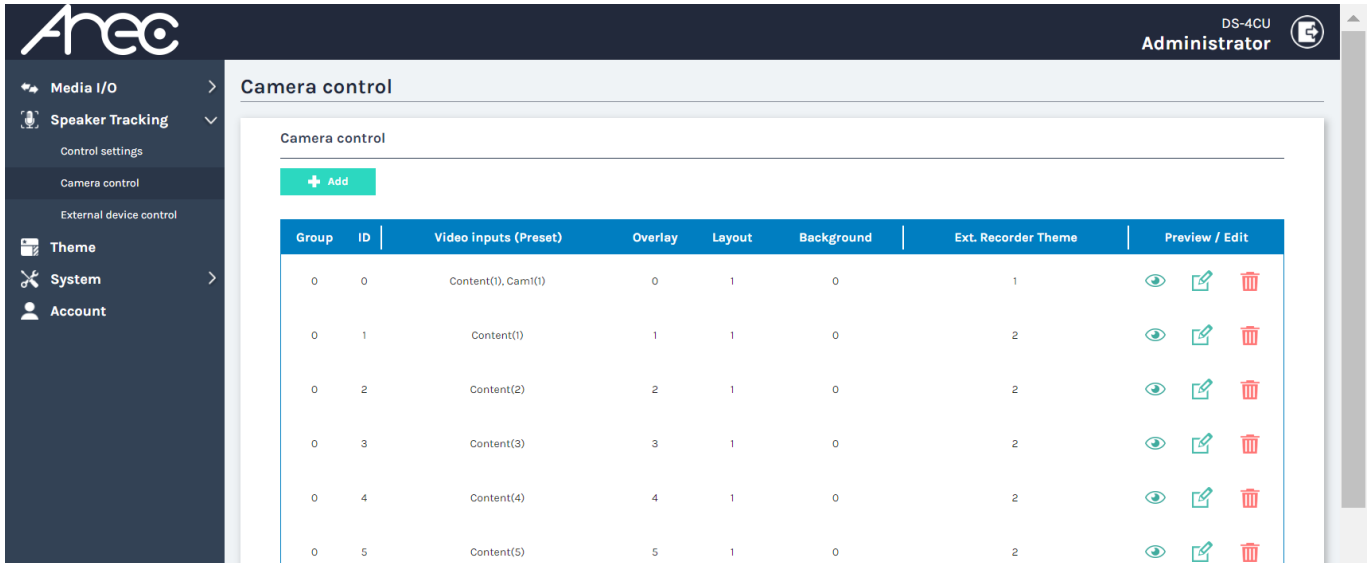
*Note: When connected with any Shure model, the **Group** on this page should always be set at **0**.*

1. Go to DS-4CU's web Admin page → Speaker Tracking → Camera control

2. Click [Add] or the edit button to edit the theme of each microphone, and click [Apply].

Parameter	Description	Range
Group	Microphone group defined by microphone system	0 ~ 255, *Only effective on SHOW and S1; Other microphone systems should always set at 0.
ID	the ID number microphone system	digits, characters, or combination of them *Refer to: How to get each of the Shure microphones' ID for the instruction to retrieve the microphone's ID

Content Preset	Preset Position of the camera that set as **1st video input** source	-1 ~ 255, -1 = OFF
Cam1 Preset	Preset Position of the camera that set as **2nd video input** source	-1 ~ 255, -1 = OFF
Cam2 Preset	Preset Position of the camera that set as **3rd video input** source	-1 ~ 255, -1 = OFF
Cam3 Preset	Preset Position of the camera that set as **4th video input** source	-1 ~ 255, -1 = OFF
Overlay	Overlay ID	0 ~ 255, 0 = no overlay
Layout	Layout ID	1 ~ 255
Background	Background ID	0 ~ 255, 0 = no background
Ext. Recorder Theme	Paired AREC media station Theme ID	-1 & 1 ~ 255, -1 = OFF

User defined ✕

Group :
0

ID :
1

Content Preset :
4

Cam1 Preset :
4

Cam2 Preset :
-1

Cam3 Preset :
-1

Overlay :
4

Layout :
1

Background :
1

Ext. Recorder Theme :
-1

Apply

3. Click 👁 to preview the theme setting

How to get each of the Shure microphones' ID

MXA Series(MXA910/MXA710/MAX310)

For Shure MXA Series, each mic lobe/channel on a Shure device corresponds to a microphone theme. The ID set on DS-4CU is the same as the mic lobe/channel number on Shure.

Ex. MXA910 - 8 lobes/channels (1~8)

On DS-4CU's camera control page, it should have Group 0, ID 1~8.

MXCW Series

Find the seat number for each microphone on the Shure MXCW series, and use it as the ID to set up the microphone theme on DS-4CU.

MXW Series

Find the channel number for each microphone on the Shure MXW series, and use it as the ID to set up the microphone theme on DS-4CU.

Control settings - Speaker action settings

This configuration defines the rule of how DS-4CU applies themes when multiple microphones are activated.

There are three modes defines as follows:
- **Multiple speaker**:
  DS-4CU always applies to the same single theme set in *General - Multiple speaker.*
- **Single speaker - Override**:
  DS-4CU applies the theme of the latest activated microphone.
- **Single speaker - FIFO**:
  DS-4CU applies the theme of the earliest activated microphone.

Set Mode of Speaker action settings

1. Go to DS-4CU's web Admin page → Speaker Tracking → Control settings, scroll down and find the **Speaker action settings**

2. Select the mode and click [Apply].

Theme configuration for Multiple speaker mode

There's no extra setting needed for "Single speaker - Override" and "Single speaker - FIFO". However, for the "**Multiple speaker**" mode, users need to set up the theme to be applied when multiple microphones are activated.

1. Go to DS-4CU's web Admin page → Speaker Tracking → Control settings, scroll down and find the **General - Multiple speaker**

2. Click the edit button to edit the theme of general default(no microphone activated). And click [Apply].

Theme - Overlay / Background / Layout

Find the current Overlay / Background / Layout ID number

1. Go to web admin → Theme

2. The number above each image is the ID number of the overlay/background/layout.