

## MXC -- Microflex® Complete

---

### Important Product Information

#### Important

##### Important Safeguards

1. **Read these instructions** - All the safety and operating instructions should be read before the apparatus or system is operated.
2. **Keep these instructions** - The important safety instructions and operating instructions should be retained for future reference.
3. **Follow all warnings** - All warnings on the apparatus and in the operating instructions should be adhered to.
4. **Follow all instructions** - All instructions for installation or use/operating should be followed.
5. **Do not use this apparatus near water** - Do not use this apparatus in a water or moistures environment - for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.
6. **Warning: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture and no objects filled with liquids, such as vases, should be placed on this apparatus.**
7. **Clean only with dry cloth** - Unplug the apparatus from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners.
8. **Do not block any ventilation openings. Install in accordance with the manufacturer's instructions** - Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the apparatus and to protect it from overheating. These openings must not be blocked or covered. This apparatus should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
9. **Do not install near any heat sources such as radiators, heat registers, stoves, air ducts, or other apparatus (including amplifiers) that produce heat.**
10. **Do not install the unit in a place exposed to direct sunlight, excessive dust or humidity, mechanical vibration or shock .**
11. **To avoid moisture condensations do not install the unit where the temperature may rise rapidly.**
12. **Do not defeat the safety purpose of the polarized or ground-type plug.** A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wider blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
13. **Protect the power cord from being walked on or pinched particularly at plug, convenience receptacles, and the point where they exit from the apparatus.**
14. **Only use attachments/accessories specified by the manufacturer .** Any mounting of the apparatus should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

15. **Use only with the cart, stand, tripod, bracket or table specified by the manufacturer, or sold with the apparatus.**



When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over - Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

16. **Unplug this apparatus during lighting storms or when unused for long periods of time** . – Not applicable when special functions are to be maintained, such as evacuation systems.
17. **Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.**
18. **Replacement Parts** - When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or having the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
19. **Safety Check** - Upon completion of any service or repairs to this apparatus, ask the service technician to perform safety checks to determine that the apparatus is in proper operating condition.
20. **Overloading** - Do not overload outlets and extension cords as this can result in a risk of fire or electric shock.
21. **Power Sources** - This apparatus should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For apparatuses intended to operate from battery power, or other sources, refer to the operating instructions.
22. **Power Lines** - An outdoor system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outdoor system, extreme care should be taken to keep from touching such power lines or circuits, as contact with them might be fatal.
23. **Object and Liquid Entry** - Never push objects of any kind into this apparatus through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the apparatus. Should any liquid or solid object fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it further.

#### Labels



“Lightning Flash Symbol” with the lightning flash with arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of un-insulated “dangerous voltage” within the product enclosure that may be of sufficient magnitude to constitute a risk of shock to persons.



“Exclamation Point Symbol” with the exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

## Note for Power Connections

Check that the voltage of your local power supply is within the operating voltage of the unit. If a voltage conversion is required, consult your DIS dealer or qualified personnel.

Set the Power switch to 'Off' if it is not used for several days.

**Important:** The equipment must be connected to earth (ground)

The wires in the main lead supplied with the equipment are colored in accordance with the following codes:

- Green-and-yellow Earth (Ground)
- Blue Neutral
- Brown Live
- The green-and-yellow wire must be connected to the terminal in the plug marked with the letter E or with the safety earth symbol or marked with green-and-yellow color.
- The blue wire must be connected to the terminal marked with the letter N or marked with black color.
- The brown wire must be connected to the terminal marked with the letter L or marked with red color.
- For pluggable equipment, the socket-outlet shall be installed near the equipment and shall be easily accessible.

## Power Disconnect

Apparatuses with or without On/Off switches have power supplied to the apparatus whenever the power cord is inserted into the power source; however, the apparatus is operational only when the On/Off switch is in the On position. The power cord is the main power disconnect for all apparatuses.

## Warning:

Operation is subject to the following conditions: (1) The device may not cause harmful interference, and (2) the device must accept any interference received, including interference that may cause undesired operation.

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in residential, commercial or light industrial environments. The equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the user manual it may cause harmful interference to radio communications.

Operation of this equipment in residential areas is likely to cause harmful interference in which case the user will be required to correct the interference at his or her own expense. Intentional or unintentional changes or modifications not expressly approved by the party responsible for compliance shall not be made. Any such changes or modifications could void the user's authority to operate the equipment.

If necessary, the user should consult a dealer or an experienced radio/ television technician for corrective action. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

**Warning:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## Cleaning

To keep the cabinet in original condition, periodically wipe it down with a soft cloth. Stubborn stains may be removed with a cloth lightly dampened with a mild detergent solution. Never use organic solvents such as thinners or abrasive cleaners since these will damage the cabinet.

## Repacking

Save the original shipping box and packing material; they may be used to ship the unit. For maximum protection, re-pack the unit as originally packed from the factory.

## Warranty

The units are covered by a 24 month warranty against defects in materials or workmanship.

## Certifications

This product meets the Essential Requirements of all relevant European directives and is eligible for CE marking.

EAC Clarification: This product meets Russian compliance regulations as well as EAC marking requirements.

Hereby, Shure Incorporated declares that the radio equipment is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: <http://www.shure.com/europe/compliance>

Authorized European representative:

Shure Europe GmbH

Headquarters Europe, Middle East & Africa

Department: EMEA Approval

Jakob-Dieffenbacher-Str. 12

75031 Eppingen, Germany

Phone: +49-7262-92 49 0

Fax: +49-7262-92 49 11 4

Email: [EMEAsupport@shure.de](mailto:EMEAsupport@shure.de)

---

## DIS-CCU Central Control Unit



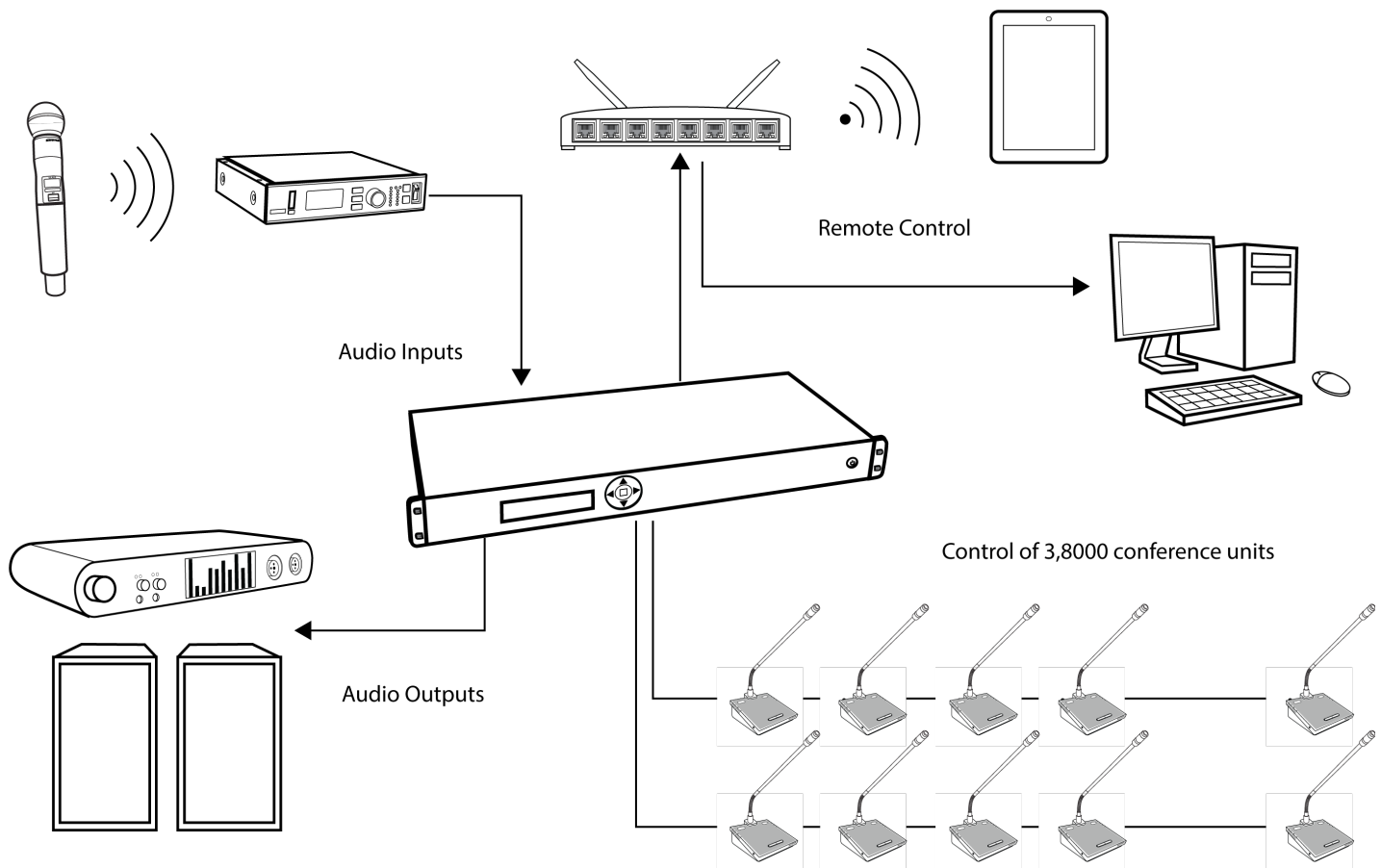
## Information in This Manual

The DIS-CCU operates standard in 5900 mode for use in a DDS 5900 system. By uploading a feature license, the DIS-CCU can operate in 6000 mode for use in MXC and legacy DCS 6000 systems. This manual describes the DIS-CCU when operating in "6000" mode.

For information on operation with the DDS 5900 Discussion system, consult that manual found on the Shure website.

## Overview

The DIS-CCU Central Unit (CCU) is the system controller for MXC and legacy DCS Conference Systems. The CCU processes a mixture of microphone units, interpretation stations, and loudspeakers, all on the same network. Supported conference systems comply with international conference standards, supporting advanced speaker control, interpretation, voting, and conference management for up to 3,800 participants.



### System Hub

The CCU connects external equipment to the conference system

## Features

When set to 6000 mode, the DIS-CCU has the following features:

- Controls a system of conference units, interpreter stations, channel selectors and voting units.
- Transports secure audio signal with a proprietary codec algorithm
- Provides a web server for advanced control through a browser interface
- Supplies power for multiple conference units
- Supports up to 31 interpretation channels for multilingual meetings

- Provides eight audio outputs to send interpretation channels or microphone groups to PA systems, audio mixers, audio recorders, or a language distribution system
- Provides two audio inputs for connecting wireless microphones, processed audio signals, an emergency broadcast message (EEM), or music during meeting breaks
- One rack unit (1RU) size installs into a standard 19" rack

## Feature Licenses

The DIS-CCU operates with DDS 5900, legacy DCS 6000, and MXC conference systems. The CCU includes the DDS 5900 mode as standard, and can operate in 6000 mode after installing a feature license.

To use MXC or DCS 6000 conference units, ensure the FL6000 is installed and operating on the DIS-CCU.

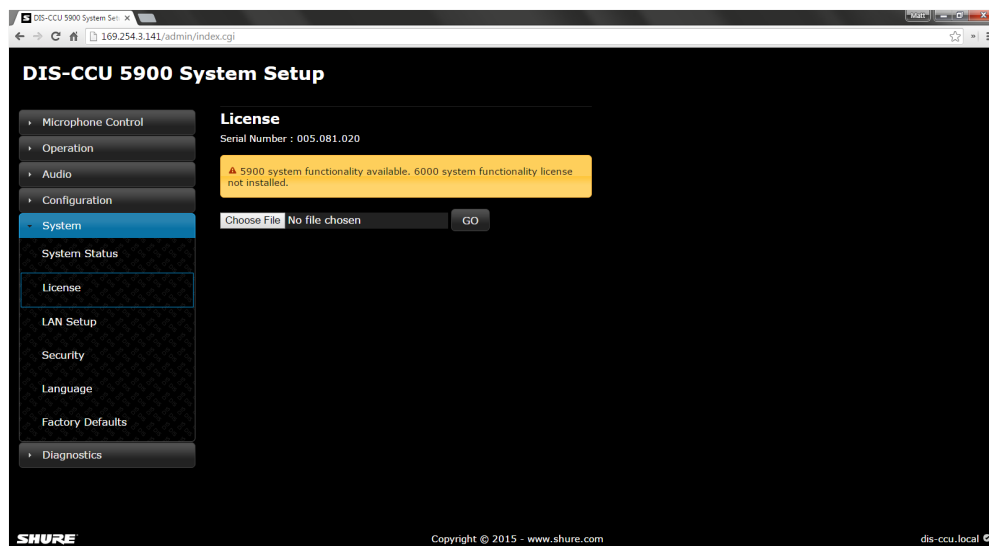
## Purchasing the Feature License File

Contact your regional Shure sales representative to purchase a feature license file to enable DCS 6000 mode and expansion features. The features are bundled in a single .xml file generated specifically for the serial number of the DIS-CCU.

## Adding the License to the DIS-CCU

After purchasing the license file, upload it to the unit using the DIS-CCU web interface:

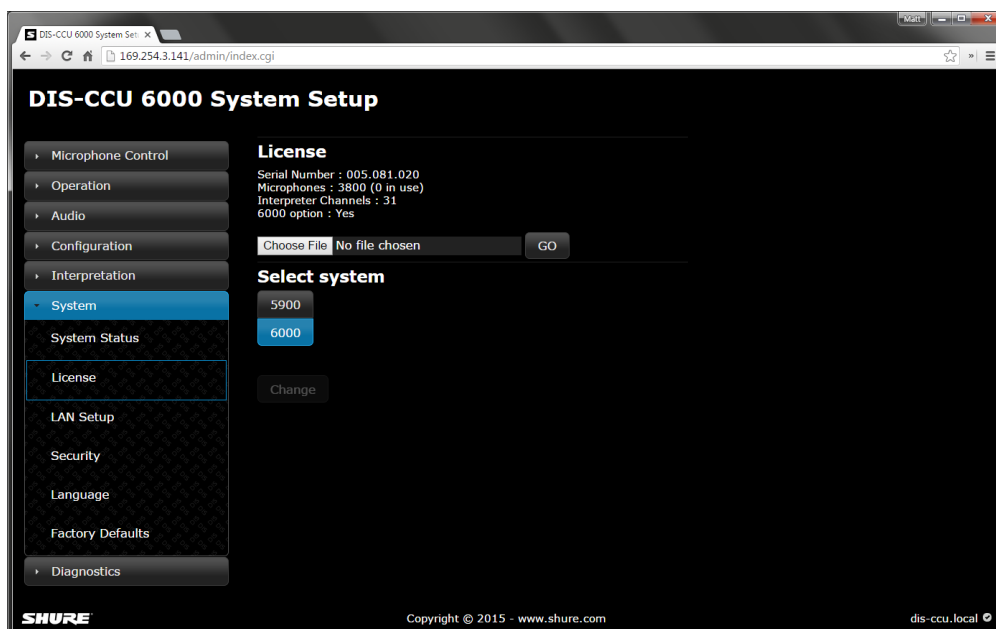
1. Save the license file (.xml extension) to the computer or USB drive.
2. Connect the DIS-CCU and open the web interface. Sign in as the Admin if a password has been set.
3. Go to the License page ( System > License ).



License Page without Upgrades

**Note:** Before the license is loaded to the system, only the DDS 5900 mode is available

4. Select Browse to locate the license file.
5. Select Go to install the file to the DIS-CCU. The unit will reboot.



### After Installing the License File

The features are listed at the top of the web page and the mode is selectable for operation with the DDS 5900 or DCS 6000 system.

The DIS-CCU Central Unit has the following functionality after FL6000 is installed:

- Conference Units max. 250
- Interpretation Channels max. 4
- Vox, voice activating Yes
- Voting Yes

Units configured as Dual Delegate count as 2 units.

By obtaining additional feature licenses, the functionality can be expanded to include further features like increasing the maximum number of supported conference units to 3,800, or expanding the number of supported interpreter channels to 8, 16, or 31

## Select the System Mode

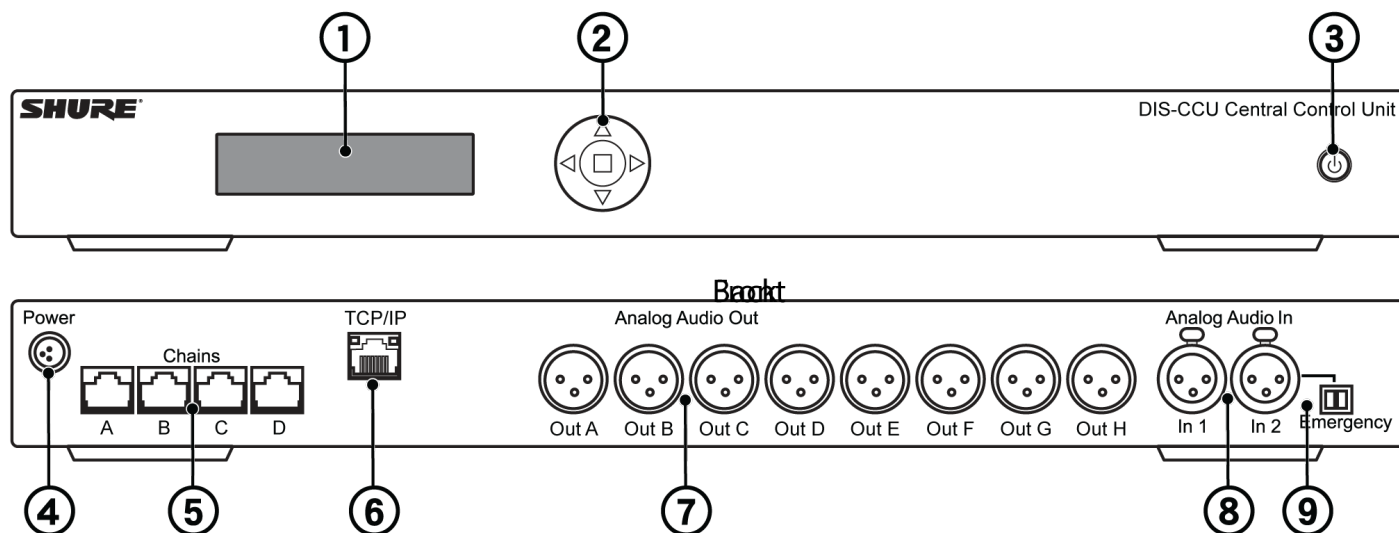
A unit with the 6000 license installed can support legacy DCS 6000 or MXC systems, as well as retaining DDS 5900 functionality. In 5900 mode, the additional feature licenses are disabled.

**Note:** Microphone units cannot be mixed across systems; DDS 5900 microphone units only operate in DDS 5900 system mode, while MXC and legacy DCS 6000 units operate in 6000 mode.

Select the system mode:

DIS-CCU Front Panel	From the license page: System > License > Select System
Web Interface	System > License Info > Select [5900 or 6000] System

# DIS-CCU Hardware Description



DIS-CCU Central Unit

Front Panel	
① Menu display	A 2x20 character OLED-display enables system configuration without a computer.
② Navigation Buttons	5-button keypad for configuring the system without a computer.
③ Power Button	<p>The power button turns on or off the central unit. All connected DCS-LAN units and power supplies will automatically power on or off with the CCU.</p> <ul style="list-style-type: none"> <li>• Green = powered on</li> <li>• Red = powered off but connected to power supply</li> <li>• Off = no power supply is connected to the CCU</li> </ul> <p><b>Note:</b> System settings are stored and persist through a power cycle.</p>

Back Panel	
④ Power Supply Connector	Threaded connector secures to the PS-CCU power supply.
⑤ DCS-LAN Outputs	<p>Four RJ45 jacks are available for connecting the microphone units, forming the DCS-LAN. The DCS-LAN chain safely carries digital audio, control data, and power over the same cable. Use any or all of the four outputs for a variety of layout configurations.</p> <p><b>Important:</b> Only connect DCS-LAN equipment to this output.</p>



<b>Back Panel</b>	
⑥ Control Connector (TCP/IP)	The RJ45 connector allows access to the built-in web application from a computer, or for connection to a control system like AMX® or Crestron®.
⑦ Audio Outputs	Eight balanced, male XLR connectors for connection to PA systems, audio mixers, audio recorders, or a language distribution system.
⑧ Audio Inputs	Two balanced, female XLR connector for adding external audio equipment to the meeting, such as wireless microphones, a teleconferencing system, processed audio signals, an emergency broadcast message (EEM), or music during meeting breaks. Input gain and volume are adjust from the CCU front-panel or web application.
⑨ Emergency switch connector	Provides an emergency override signal in the event of an emergency. When the connected switch is closed, the audio signal on Input 2 is distributed to all output channels, overriding all other audio inputs.

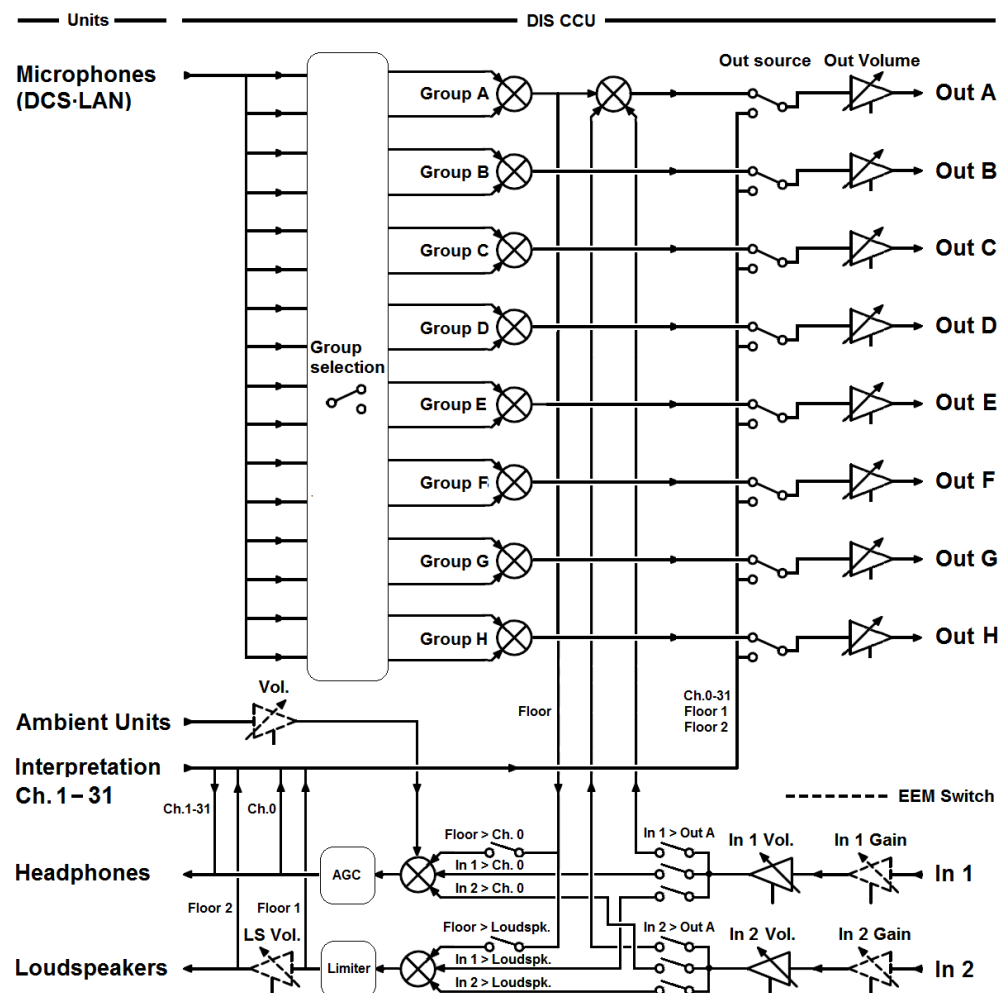
## Rackmounting the CCU

Install the central control unit in a standard 19" rack using the supplied 19" brackets. Remove the screws holding the top and bottom covers, then attach the brackets to the front of the unit using the same screws.

**Important:** Use the two 10 mm length self-threading screws closest to the front and the 8 mm length threaded screw furthest from the front.

The built-in fan draws air in on the left side and exhausts air on the right, and so does not require extra space above or below for cooling.

## Simplified Audio Diagram

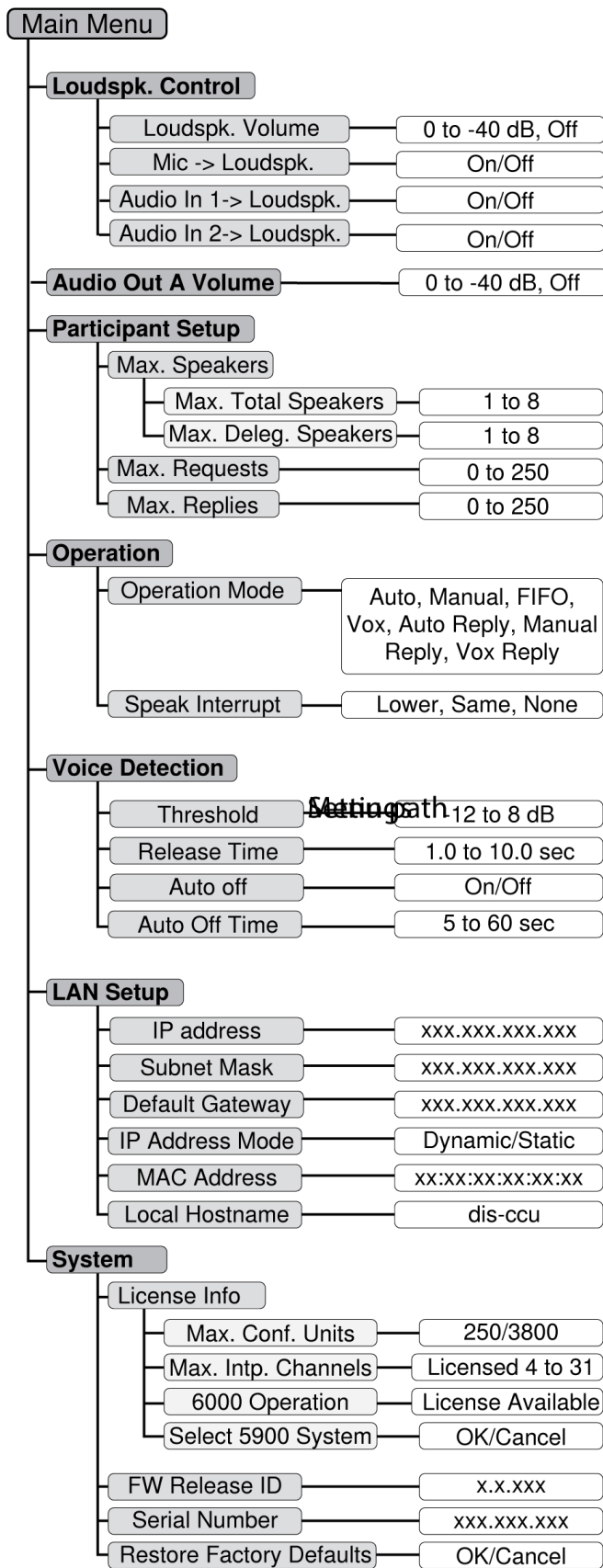


## Menu Navigation

The DIS-CCU provides controls from the front panel for system setup and configuration. Use the 5-button keypad to navigate the menu and change settings.

The figure below gives an overview of the menu structure.

- Use arrow buttons to cycle through menu items
- Press enter (center) button to navigate to an editable field.
- Use up/down buttons to cycle through the available values



Menu Overview - DCS 6000 Mode

## NFC Card functionality

NFC card functionality is a feature where delegates identify themselves to the system by use of an MXC NFC card. The NFC card contains information like Delegate ID, Login Code and Location ID, which the Microflex® Complete system uses to identify the user of the Conference Unit by getting the personal details from the database in the SW6000.

Use the free Shure NFC Card Programmer application software (available on [www.shure.com](http://www.shure.com)) and an authorized NFC card programmer device to encode a participant's information on a supported NFC card for standalone (no SW6000) use. For functionality with SW6000, install the "SW6070 Chip Card Login" license module on the connected PC, and program cards with the SW6000 Conference Management software.

The functionality in general is explained in the SW6000 CAA User Manual. However the functionality directly related to the 'Control & Indications' in the units is explained here.

## MXC Conference Units

MXC conference units facilitate communication between participants in group meetings and conferences. The multifunctional units enable participants to speak and be heard with clarity, even in large and multilingual events, by combining a gooseneck microphone, loudspeaker, headphone jack, and user controls. For advanced meeting tasks, some conference units include features for voting, following along to the agenda, managing speakers, and more.

**Note:** Speaker and meeting management settings are highly configurable and can be tailored to meet your event requirements. See meeting setup for more information.

### Gooseneck microphone

The MXC microphone is tailored for speech clarity and includes a flexible gooseneck at the base for easily sharing between participants. Four models of gooseneck are available--40 cm (15.75 in) or 50 cm (19.69 in), single or double bend--as well as the MXC406/MS mini shotgun microphone.

### Loudspeaker

An integrated loudspeaker provides each participant with a clear audio signal of the floor mix. Individual, localized loudspeakers improve room acoustics and reduces the installation impact on the meeting space.

### Headphone output

The headphone output is used for assisted listening of floor/loudspeaker audio, as well as listening to simultaneous interpretation of the event in other languages. Interpreters broadcast their language on an individual channels, allowing participants to select the language of their choice.

### Microphone buttons

The microphone buttons are used to control a participant's microphone and a variety of functions relating to speaking and participant management. The buttons are interchangeable and function differently depending on the participant role and the way the meeting is set up.

### Meeting controls

Meeting controls are provided on some conference unit models for voting and advanced meeting interaction.

### Connection jacks

DCS-LAN in/out connection for units, providing power, audio, and control transport on the same cable.

### **NFC card slot**

Participants can sign into any conference unit using the card slot, instantly assigning their organization information and preferences to the unit.

### **Microphone Functionality**

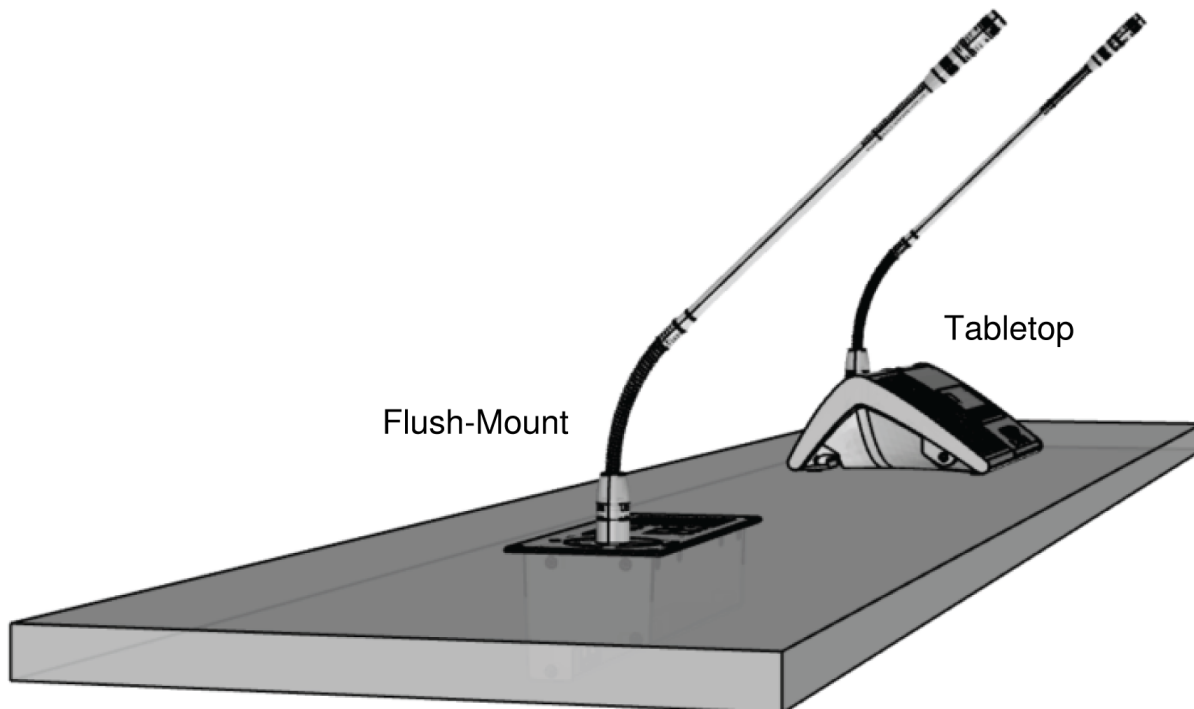
Microphone functionality is a feature where participant in a conference can use a microphone in an MXC Discussion Unit to address an audience. The sound from a conference microphone is called the 'Floor' sound.

The 'Floor' mix can then be listened to in built-in loudspeakers in the conference units, in Language selectors, in Interpreter Sets, or the sound can be fed to an external PA system.

While the number of allowed open microphones can be set at the CCU, the sound from all the open microphones is combined in the 'Floor' mix.

### **Mounting Options**

To accommodate numerous variables in each installation, the MXC series provides several models in both portable and flush configurations.



### **Installation options**

Both models include the same features, but are useful for different environments and applications.

Tabletop (Portable)	<ul style="list-style-type: none"> <li>• No modification required to table surface</li> <li>• Easily add or remove units</li> <li>• Can be fixed to tabletop using size 4 screws</li> </ul>
Flush-Mount (Installed)	<ul style="list-style-type: none"> <li>• Smaller footprint on table</li> <li>• Clean, professional look</li> </ul>

Consider the following variables when making a decision on which type of MXC microphone unit to purchase:

- Permanence: Is this a temporary or permanent installation?
- Cabling: Is your furniture historic or costly to modify?

### Conference Unit Hardware Descriptions

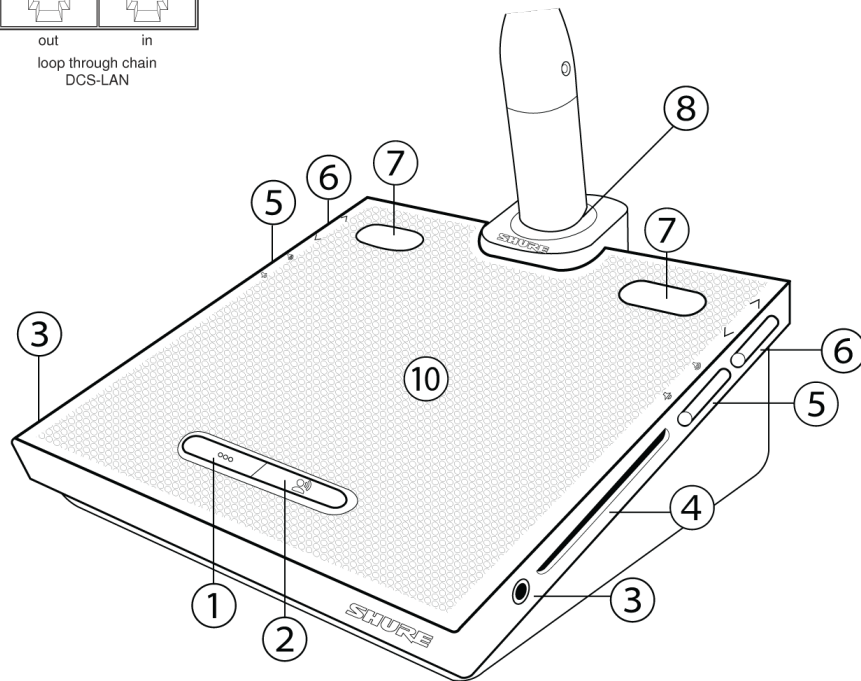
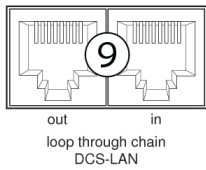
Not all features available on all MXC conference units.

① Function Button	Hardware button which can be mapped to various functions
② Speak Button	Activates microphone to address meeting
③ 3.5mm Jack	For listening to an interpretation channel or floor audio over headphones
④ NFC Card Slot	Provides quick participant identification
⑤ Volume Control	Increases and decreases audio playback volume
⑥ Channel Selection	For selecting an interpretation channel
⑦ Channel Indicator	OLED display to indicate interpretation channel
⑧ Microphone Input	Lockable connector for MXC gooseneck microphone
⑨ DCS-LAN Network Connection	For passing audio and network data and power
⑩ Loudspeaker	For floor audio
⑪ Voting Buttons	Configurable for 3- or 5-button voting
⑫ Audio In/Out	Audio input and output channel
⑬ XLR Input	For microphone audio
⑭ Ground/Lift Toggle	Lifts the ground from pin 1 of the XLR input

## Portable Model Variations

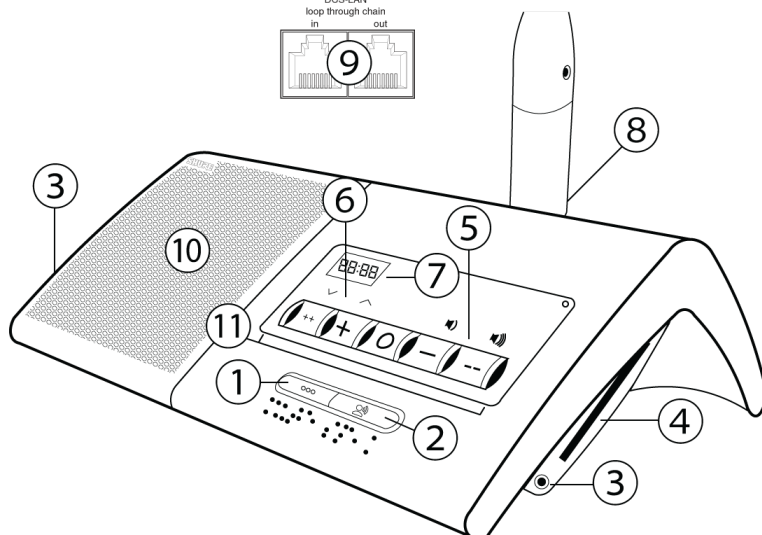
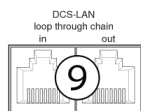
### MXC615 & MXC620 Conference Unit

Conference and discussion unit, featuring single- and dual-delegate roles and an optional Braille 'Mute/Speak' overlay.



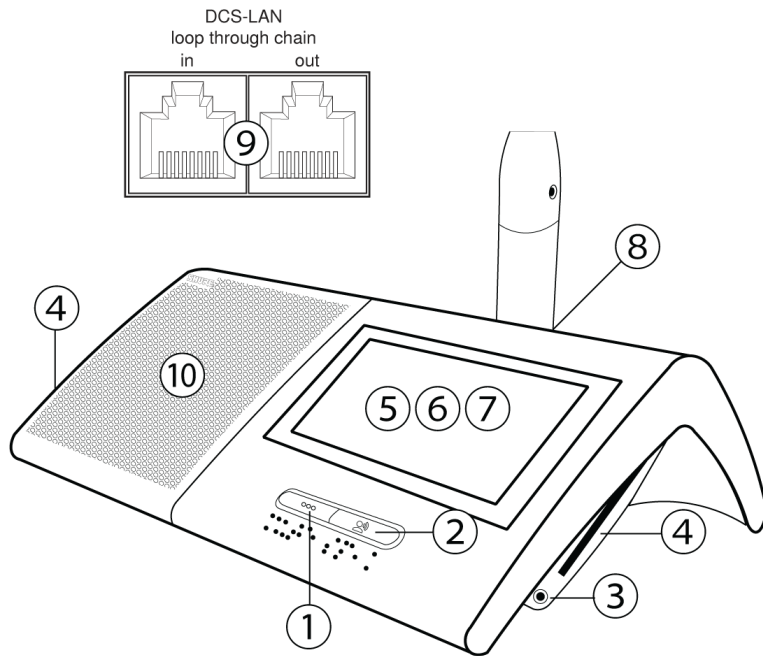
### MXC630 Voting Conference Unit

Conference unit with voting capability, participant identification using NFC, and integrated Braille 'Mute/Speak' labels on speak and function buttons for single delegate.



### MXC640 Touchscreen Conference Unit

Conference unit with touchscreen controls, voting capability, dual-delegate participant identification using NFC, and integrated Braille 'Mute/Speak' labels on speak and function buttons.

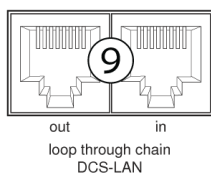
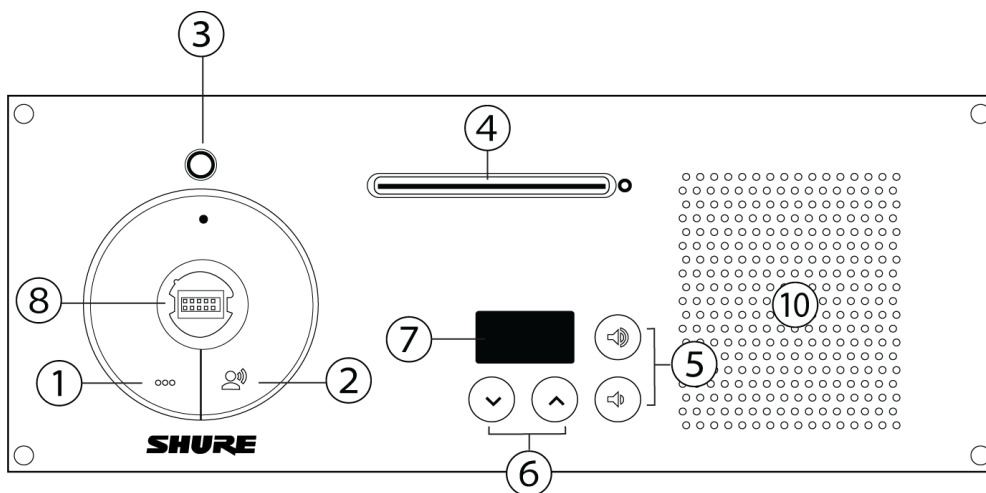


### Flush-Mounted Model Variations

The Flush-mounted conference unit variants install permanently into a table or podium. A low-profile design conceals the base and cabling below the tabletop surface.

#### MXC620-F Conference Unit

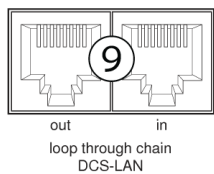
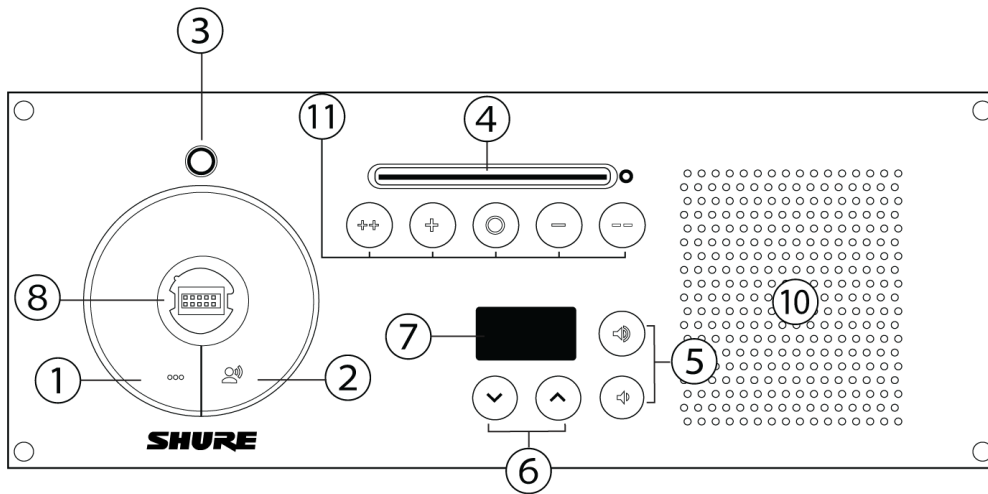
Flush-mounted conference unit featuring NFC card identification and single-language channel selector.





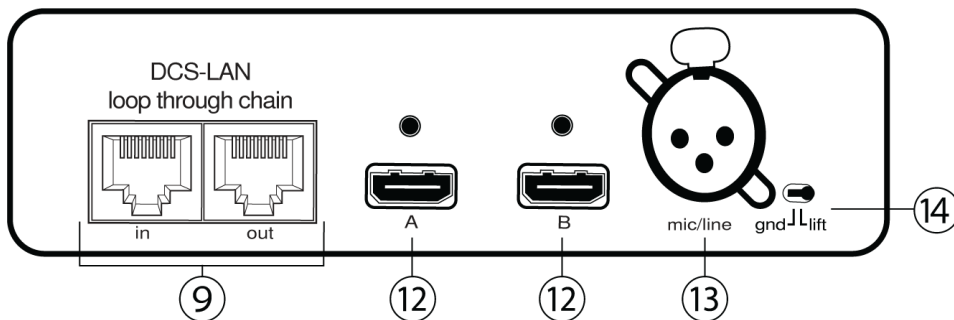
### MXC630-F Voting Unit

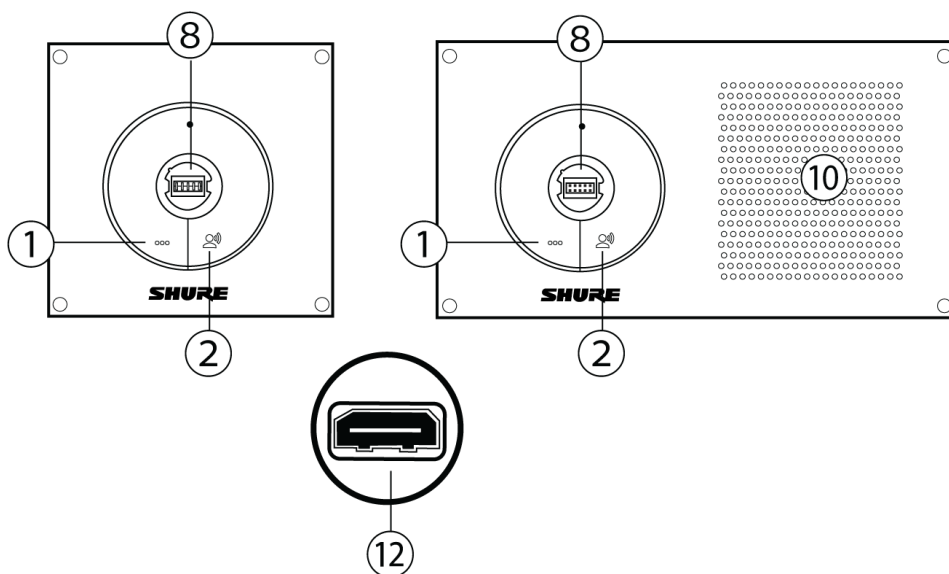
Flush-mounted voting conference unit with NFC capability, single-language channel selector



### MXCMIU Multi Interface Unit

A compact conference for applications with limited mounting space, the MIU offers multiple operating modes (Listener, Delegate, Chairman, or Ambient) for use with Flush-Mounted Interface Plates via HDMI connection or external source audio through the XLR input.





## MXCMIU-FS | MXCMIU-FL Flush-Mounted Interface Plates

### Controlling the Discussion Unit

MXC discussion units are programmable during setup to support the role of each member of a meeting.

#### Chairman

As the leader of the event, the chairman has several unique features enabled on the discussion unit.

- **All-Delegate Off:** For meeting management, the chairman uses this button to instantly turn off all delegate microphones and clear the Speaker list.
- **Speak:** The chairman can always turn on the microphone, overriding delegate units even when the maximum number of open channels has been exceeded. Therefore, there is no mute button; the chairman simply presses the Speak button to turn the microphone on and off.

#### Delegate

Delegate units contribute to the main audio mix called the floor mix. The number of simultaneous delegate speakers is limited, requiring different control buttons to participate in the discussion:

- **Speak:** Turns on the microphone or adds the user to the request queue, depending on the system settings. Microphone status displayed by the button LED:
  - Red = microphone is on
  - Green = microphone is in the request queue
- **Mute:** Temporarily mutes the audio from the microphone. While the button is pressed, the delegate retains speaking privileges but the microphone will not pass audio.

### User Controls & Indications

The following lists the microphone controls on MXC conference units. Please note, not all controls are available on all units:

- **Speak button (delegate unit)**  
Pressing the Speak button turns on the microphone or will place the microphone in the request queue, if microphone function is permitted in 'Operation mode'
- **Speak button (chairman unit)**

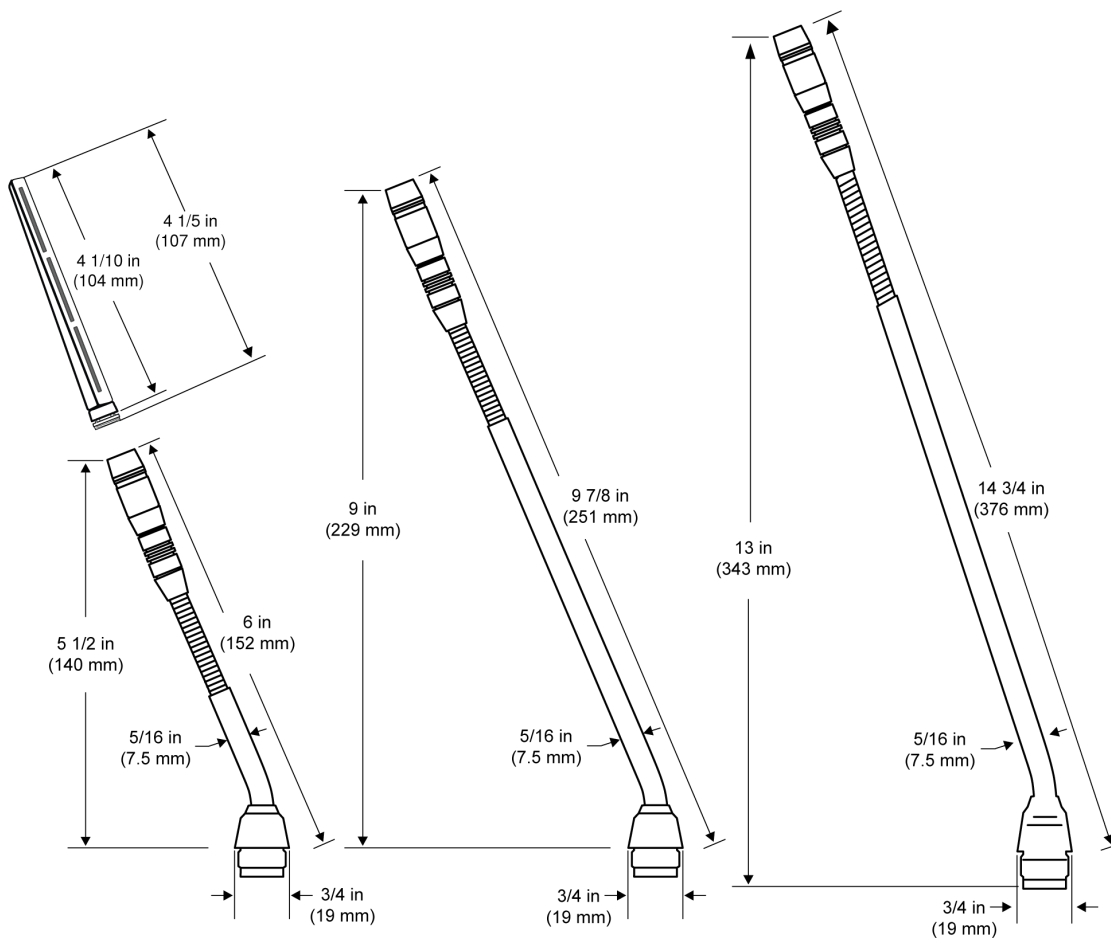
Pressing the Speak button turns on the microphone

- **Speak LED**  
Lights up with a red color when the microphone is ON
- **Request LED**  
Lights up with a green color when the microphone is put in the request queue (see 'Operation modes').
- **All del off button (chairman unit)**  
Pressing the All del off button turns off all delegate microphones
- **Delegate off/All del off LED (chairman unit)**  
Lights up with a green color when the button is pressed with the exception of the DC 6990 P that lights up with a red color in the first release
- **Mute button**  
Pressing the Mute button mutes the microphone while the button is activated without removing the right to speak
- **Exclusive button (chairman unit)**  
Pressing the Exclusive button mutes all delegate microphones and activates the chairman microphone while the button is activated
- **Exclusive LED (chairman unit)**  
Lights up with an orange color when the button is activated
- **Next on button (chairman unit)**  
Pressing the Next on button turns on the first request on the request list
- **Next on LED (chairman unit)**  
Lights up with a red color when the button is activated
- **Microphone light ring**  
Lights up with a red color when the microphone is ON, turns off if the microphone is muted

## Microflex Multipin Gooseneck Microphones

Lockable gooseneck microphones for use with MXC/MXCW conference units.

- Commshield® Technology eliminates RF noise
- Locking 10-pin modular connector
- Built-in red/green/yellow LED indicator
- Compatible with MX-series omni, supercardioid, and mini-shotgun cartridges
- Available in 16 inch/40 cm or 20 inch/50 cm lengths, with optional Dualflex configuration



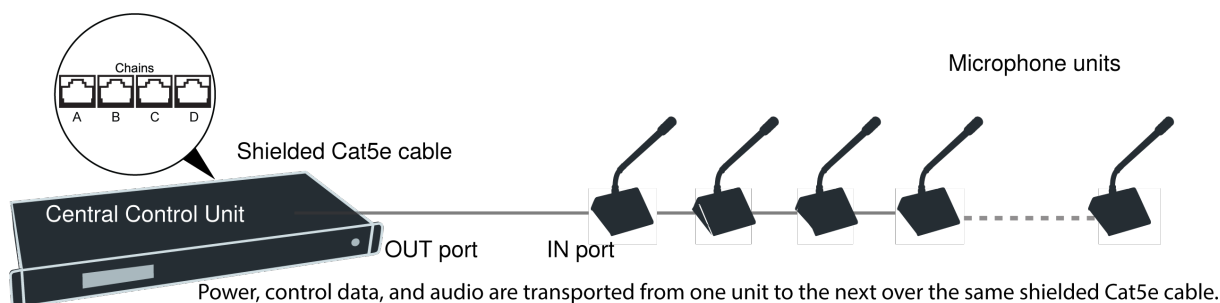
## Connecting the DCS-LAN Equipment

Shure offers cables designed specifically for the MXC line of conferencing and discussion equipment. The Shure EC 6001 are high-quality Ethernet cables available various lengths from 0.5 m to 100 m. Each cable has been tested to ensure reliable system performance. See the accessories section for ordering information on the EC 6001-xx.

**Important:** Cables and connectors must be shielded for stable system performance. If an installation does not use Shure EC 6001 cables, they must follow the Cat5e cable requirements.

## Connecting Conference Units and DCS-LAN Components

Conference units and DCS-LAN components are connected in sequence (daisy-chain) using the two RJ45 ports on each unit. Connectors are **not** interchangeable: the previous unit must be connected to the IN port, and the following unit to the OUT port. Always use shielded Cat5e (or higher) cabling for reliable system performance.



Power, control data, and audio are transported from one unit to the next over the same shielded Cat5e cable.

To protect the equipment, ensure that the central control unit (CCU) **is always off** when connecting or disconnecting the microphone units. Use any of the four chain outputs (A, B, C, and/or D) for connecting DCS-LAN components.

1. Power off the CCU to protect the equipment during set up.
2. Connect a chain output on the CCU to the first microphone unit with the shielded Cat5e cable.
3. Connect the rest of the microphone units in sequence, using the RJ45 jacks on the bottom of each unit.
4. Turn on the CCU by pressing the power button. The microphone units will power on. The unit is stable once the control button LEDs stop flashing.

Note: Do not turn off CCU power until the system has stabilized

## Cable Requirements

Type	Cat5e (or higher) twisted pair
Shielding	F/UTP or U/FTP
Connector	Shielded RJ45
Weight	AWG 24
Maximum Cable Length	<ul style="list-style-type: none"> <li>• <b>DIS-CCU only:</b> 200 m</li> <li>• <b>DIS-CCU with repeater units:</b> 680 m</li> </ul>

**Important:** Cables and connectors must be shielded for stable system performance. If an installation does not use Shure EC 6001 cables, they must follow the Cat5e cable requirements.

### Using Patch Panels

When designing a system with a patch panel, crimp the cable to the female shielded connector on the panel. Then simply use short jumper cables to connect to the microphone units. Make sure the chain is always terminated by a microphone unit or a termination plug included in the SPS CU spare parts package.

### Installation Best Practices

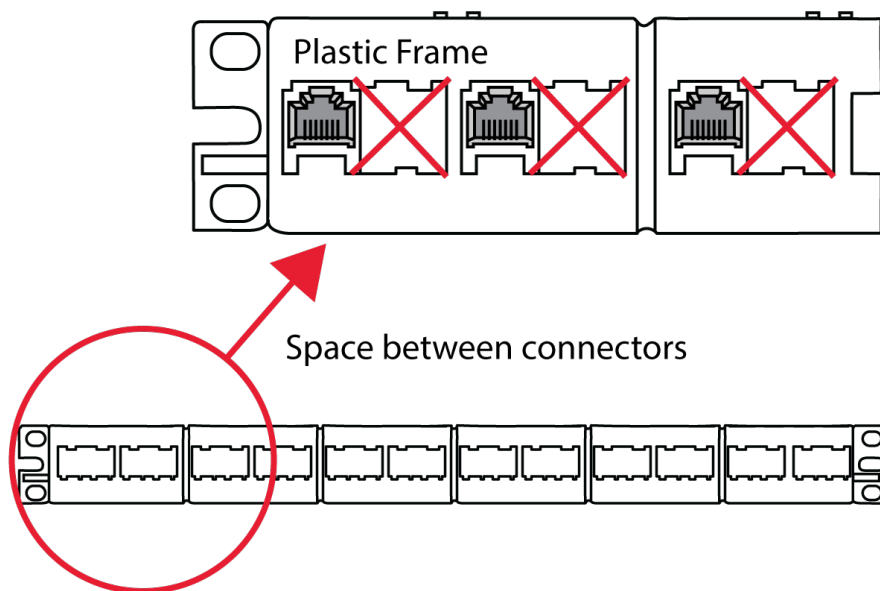
Follow these guidelines for the most reliable installation.

## Continuity of Shielding

Shielding must be consistent through the DCS-LAN chain. Any cable or patch panel used for MXC components requires shielded RJ45 connectors. All MXC components feature shielded RJ45 female connectors.

### Avoiding Accidental Grounding (Galvanic Isolation)

Avoid accidentally grounding the DCS-LAN signal with the chassis ground of a patch panel. The DCS-LAN uses the shield as a signal ground reference and cannot contact another ground anywhere in the connection.



### Avoid Grounding in a Patch Panel

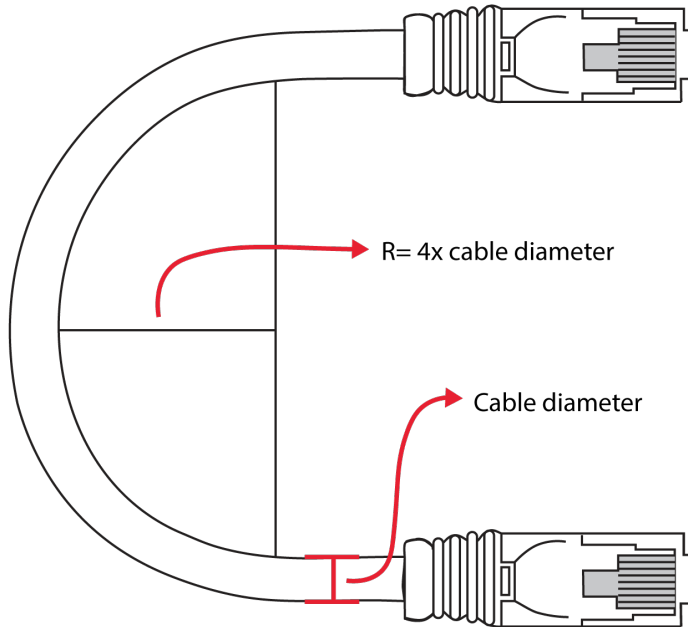
To avoid ground issues:

- **Plastic frames in patch panel:** this ensures that the female RJ45 connectors do not ground to the chassis of the patch panel.
- **Blank space between connectors:** leave a space between each female RJ45 connector in a patch panel.
- **Shielding continuity:** each component in the chain must be shielded properly.

**Note:** The female connectors in all MXC components units feature an air gap that isolates the chassis of the connector and the chassis of the unit preventing any galvanic (physical and thus electrical) connection.

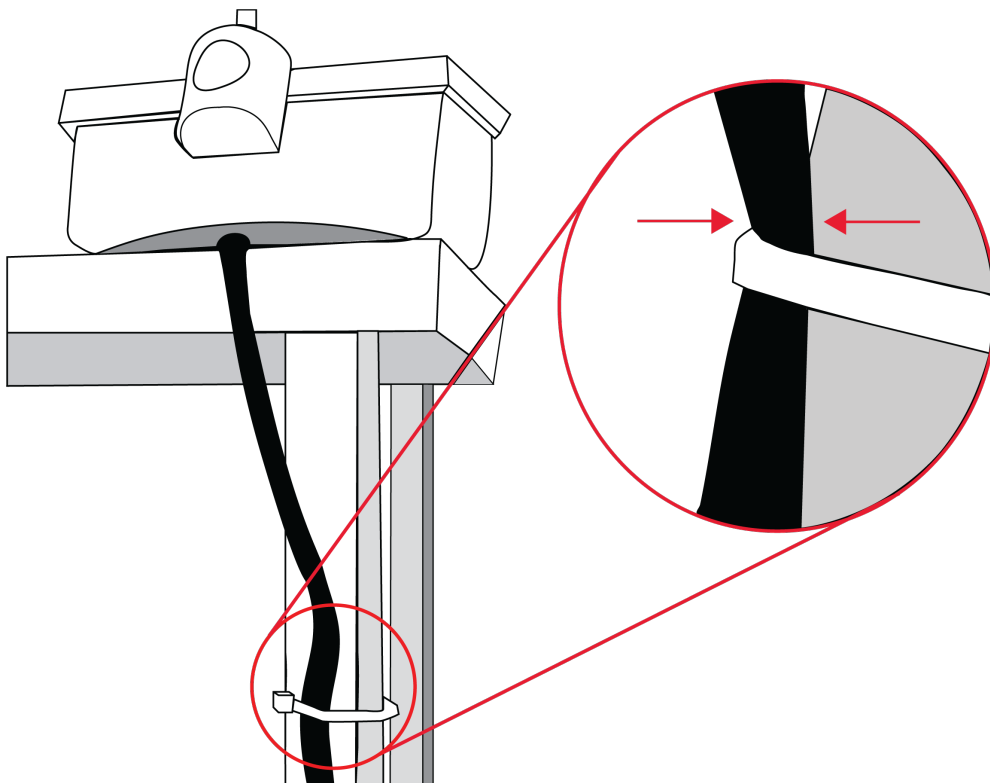
### Properly Securing Cables

As with any cable carrying a signal, use care when installing the equipment.



### Bending Rule

Do not sharply bend the cable. Ethernet cables cannot bend more than four-times the diameter of the cable.



### Pinching

Do not over-fasten the cable. A pinched cable may not operate correctly.

## Connection Diagrams

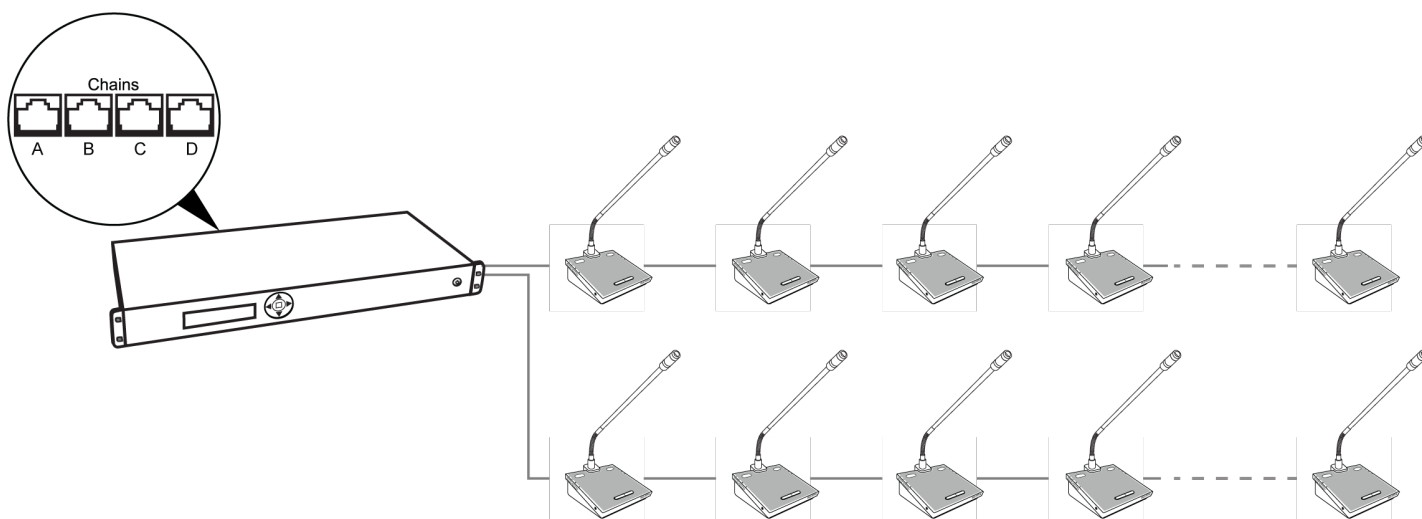
The following system diagrams illustrate typical hardware connections to the DIS-CCU central control unit. Actual installations may use different combinations of hardware, but follow the general concepts outlined below.

To add cable redundancy to your system, connect the DCS-LAN OUT port of the final conference unit to an MXC Redundancy Interface Box (MXC-ACC-RIB), which loops back to that chain's source output.

**Note:** Flush-mount and portable conference units are interchangeable in the following drawings, unless noted.

### Basic Setup with Conference Units

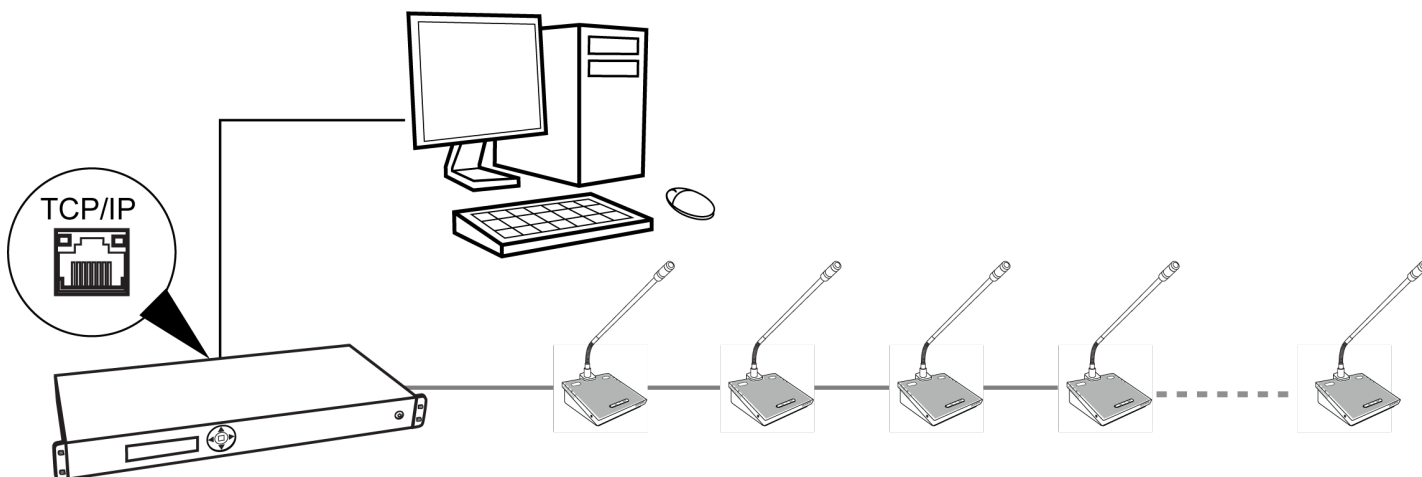
The system is operational without the use of a computer. Use the CCU navigation screen to set up the installation.



### Basic System with Multiple Chains

### Computer for Advanced Control

Connect a computer to the central control unit for comprehensive management of the system through a web browser. Connect an Ethernet cable from the dedicated TCP/IP port to a computer.



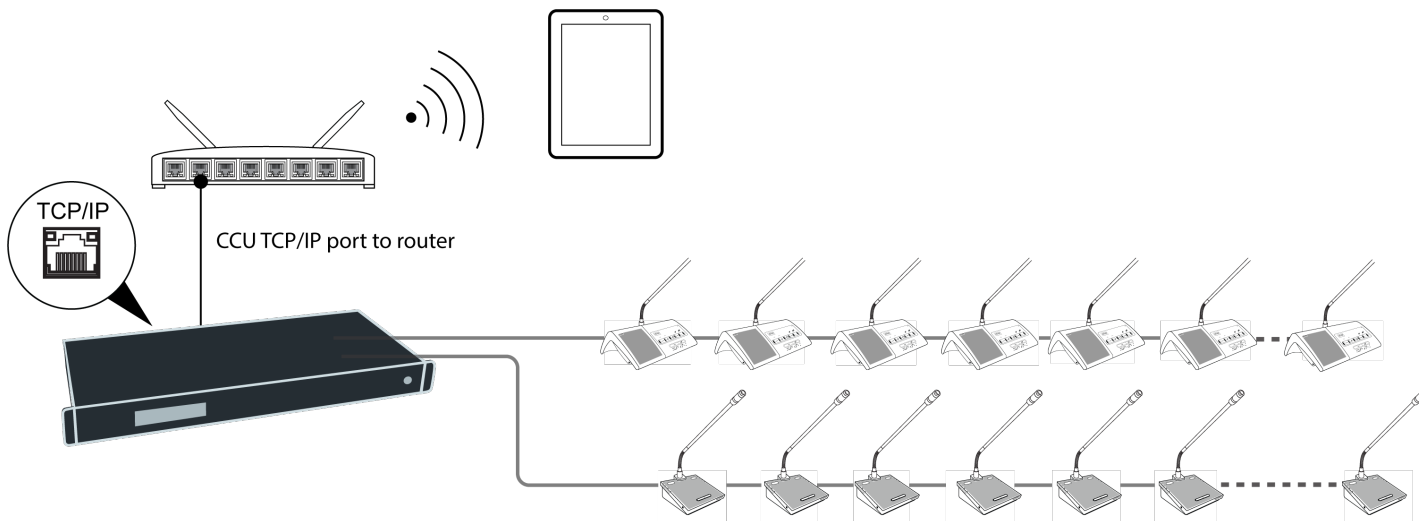
### Computer Control

Connect the CCU TCP/IP port to computer



## Tablet or Laptop for Wireless Control

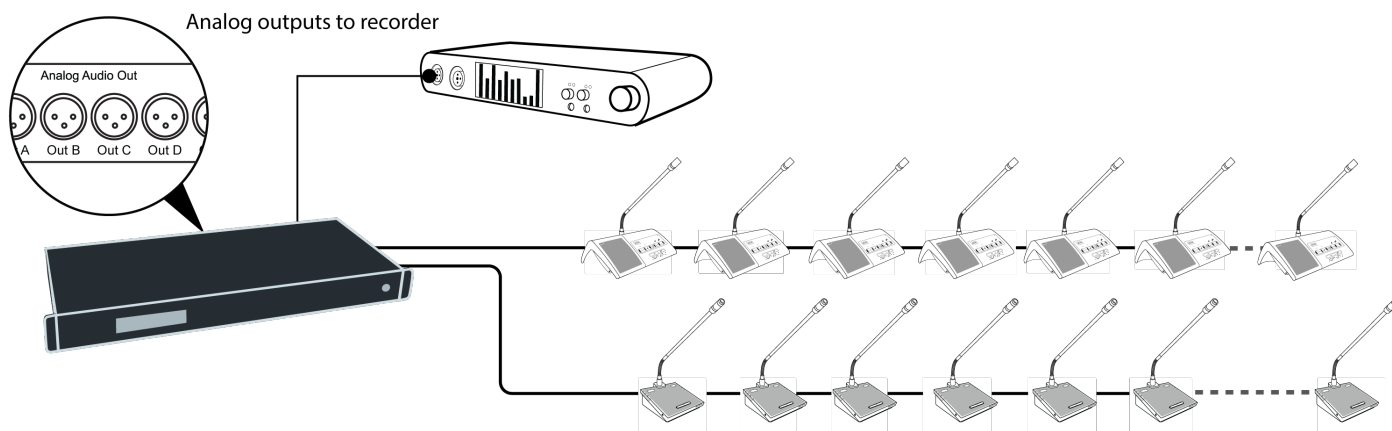
Use a wireless router to access the web browser from a laptop or tablet. The web browser on a mobile device offers the same comprehensive system management.



## Wireless Control

### Audio Recorder

Connect an audio recorder to the analog outputs of the CCU to record floor audio, translations, or a specific set of microphones. Use the browser interface to buss units to groups and assign them to the specific output (A-H). Connect the XLR outputs of the CCU to the inputs of an audio recorder.



## Recording Audio

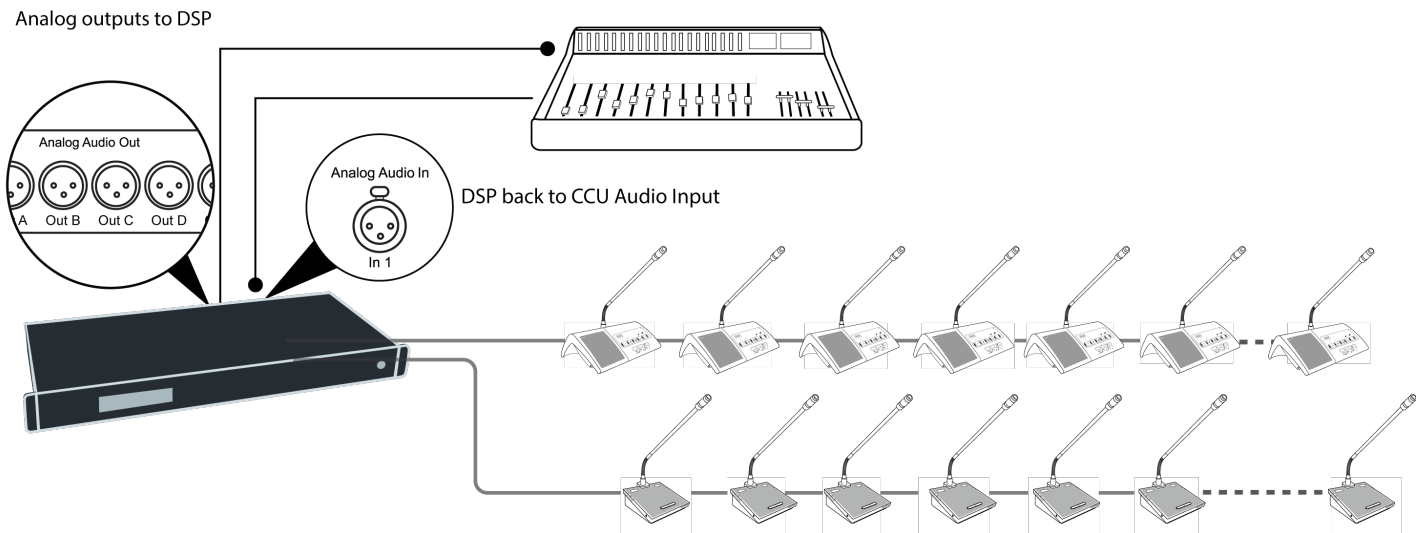
### Mixer or DSP

Connect a mixer to the CCU analog outputs to control individual microphone volume or equalization. Use the browser interface to buss units to groups and assign them to the specific output (A-H).

To return the audio to the DCS 6000 system:

1. Connect the output of the external device to Audio Input 1 on the CCU
2. Route the Input 1 audio by selecting the Loudspeaker and Ch. 0 and deselecting Out A (Group) Audio > Input Control > Audio In 1

- To avoid a feedback loop, turn off the internal Floor routing by deselecting Loudspeaker and Ch. 0: Audio > Input Control > Floor

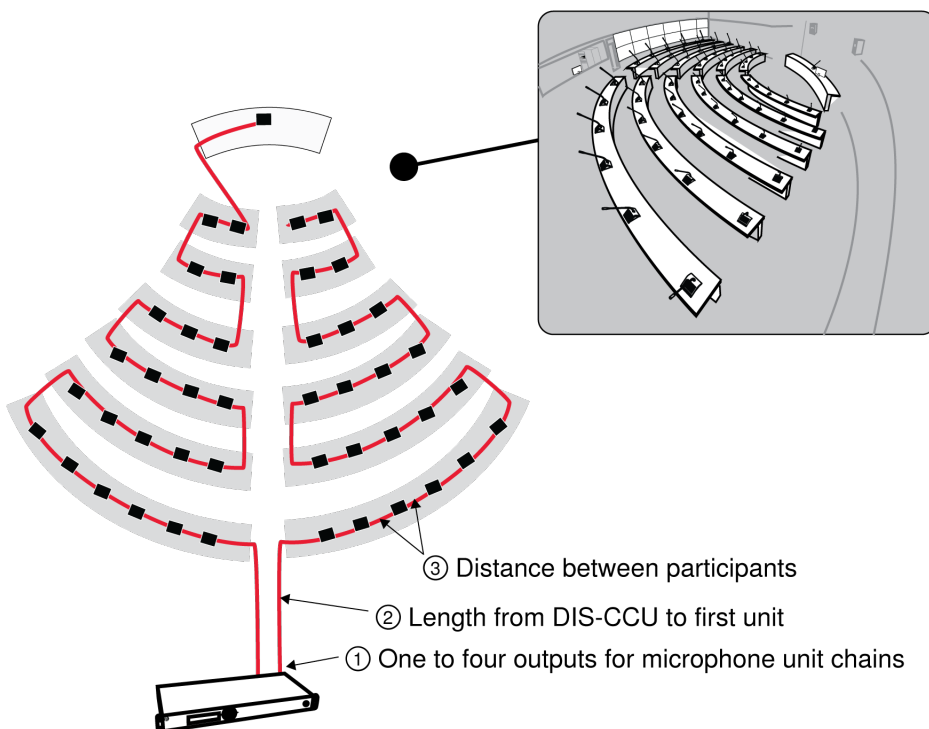


Inserting a Mixer or DSP

## DCS-LAN Power Calculator

For many installations, the DIS-CCU supplies sufficient power for the conference units. The CCU can power multiple units at a time without additional equipment. The number of supported conference units depends on the size and layout of the installation.

To determine the specific requirements for your installation, use the DCS-LAN Power Calculator at <https://dcslan.shure.com>.



Power Depends on Installation Variables

To maximize the unit count without adding equipment:

1. Use multiple chain outputs from the CCU. Units must be divided evenly across each chain
2. Position the CCU so that the distance to the first microphone unit is as short as possible
3. Keep the total cable length as short as possible by decreasing space between units

## Installing Large Systems

### Power Supplies for Additional Components

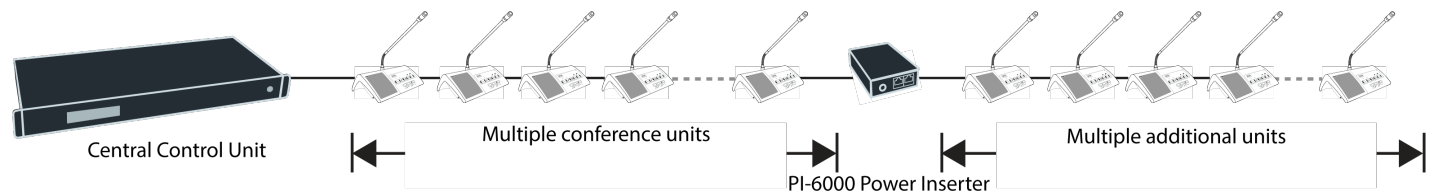
To add additional components to the system, add an inline or rackmount power supply to the microphone unit chain. Multiple power supplies can be used to reach the maximum 3,800 supported units.

**Note:** To exceed 250 units, make sure the FL6000-3800 license has been purchased and installed in the CCU.

#### Inline Power Supply

Use the PI-6000 power inserter to add an inline power supply for up to 50 more microphone units. The unit may be connected at any point in the chain to power the additional components.

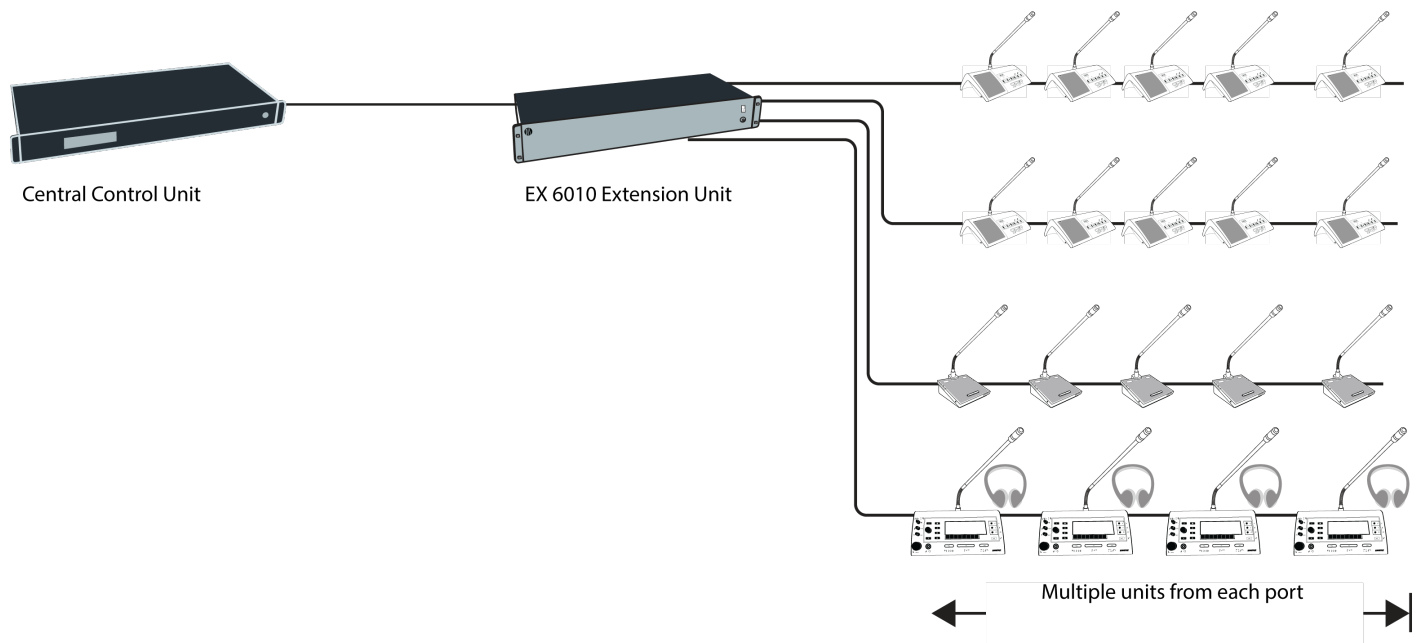
**Note:** The PI-6000 does not refresh the data signal, so total cable length cannot exceed 200 m before a repeater.



#### Inline Power Supply (1x)

#### Rackmount Power Supply for 4 Additional Chains

Use the EX 6010 rackmount extension unit to add additional components and configuration options. The unit expands the DCS chain into 4 separate outputs, each with a power supply equivalent of a CCU.



Rackmount Power Supply (x4)

## System Set Up

### User Interface for the MXC640

To activate the console, press the LCD touch screen. Login using code or chip card if prompted.

#### Start-up screen

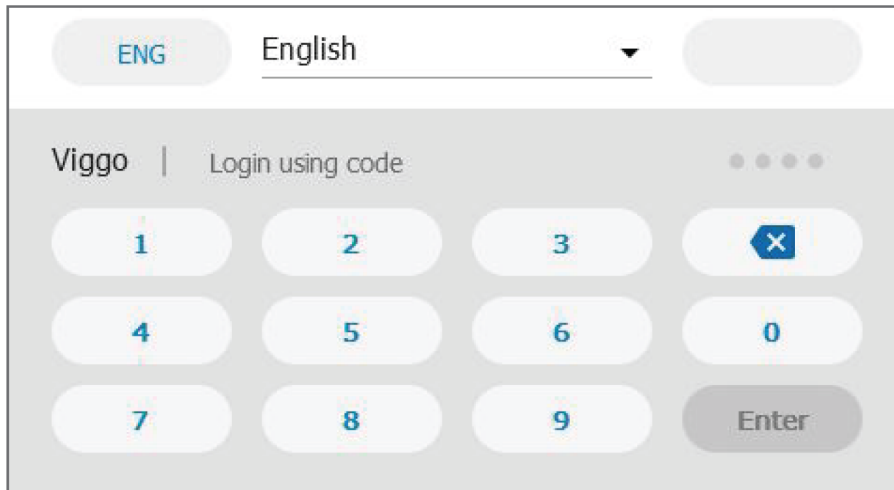
When the system is powered up, an initialization and start-up screen appears.

It includes the conference name if a conference has been started in the SW6000. It may also include a delegate name, depending on the login mode set by the system administrator.

Press the touch screen to enter.



Insert an NFC card, or touch the screen to log in with a PIN.



## Navigation Pane

When the user leaves the start-up screen, the Home screen appears. At the top of the screen is the navigation pane, for moving between different screens to access different options and information.

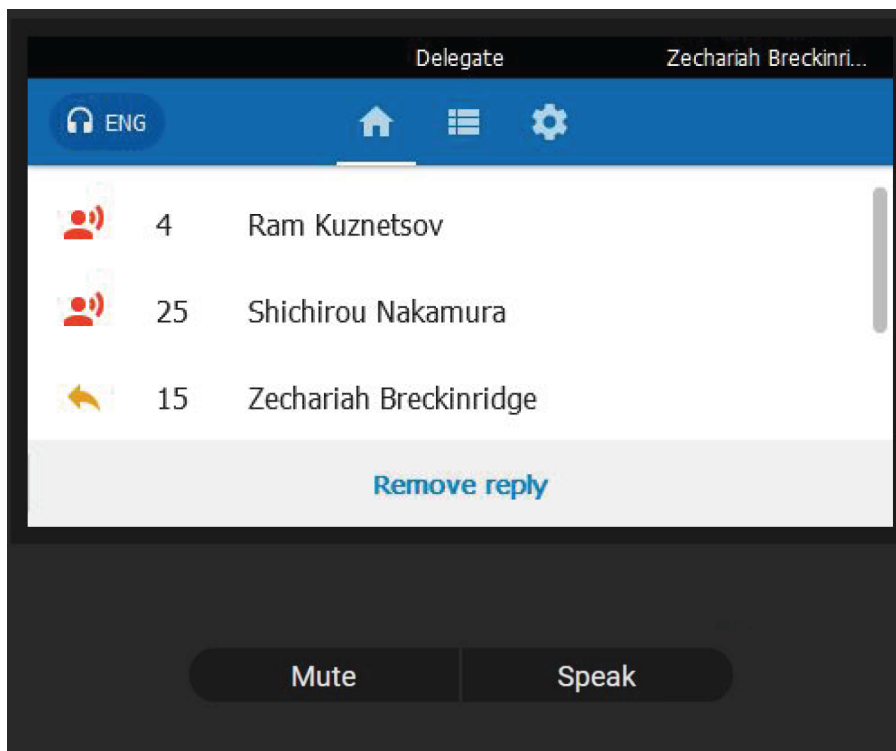


- ① Headphone Language
- ② Home
- ③ Agenda
- ④ Voting (Chairman only)
- ⑤ Settings

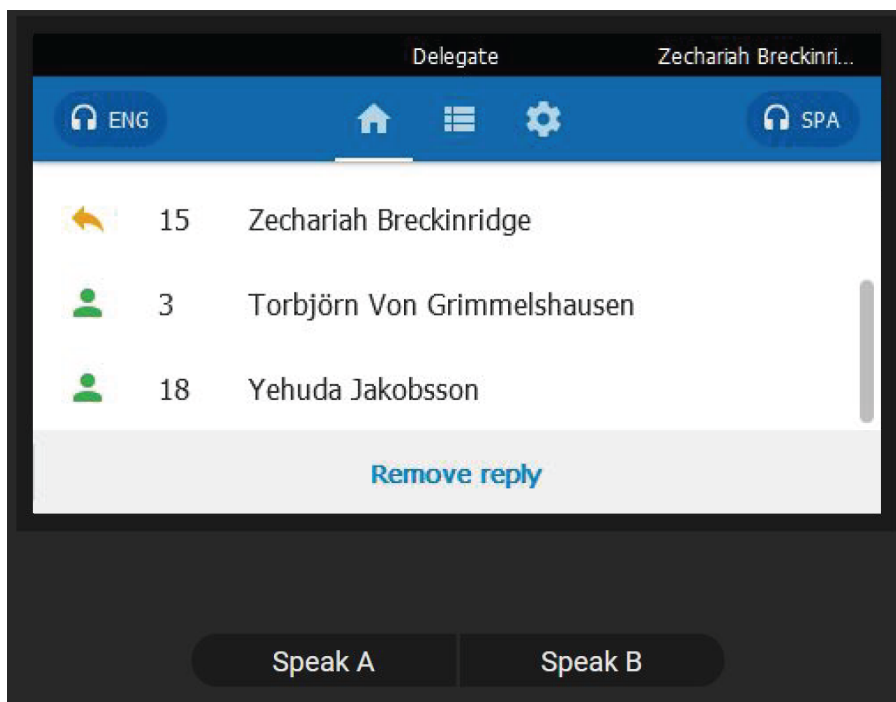
## Home Screen

The Home screen includes a combined speaker and request list with scroll functionality. The Reply button allows the user to select from a list of predetermined replies.

Single Delegate consoles offer dedicated Speak and Mute hardware buttons and two quick-access replies, with additional replies available by selecting More.



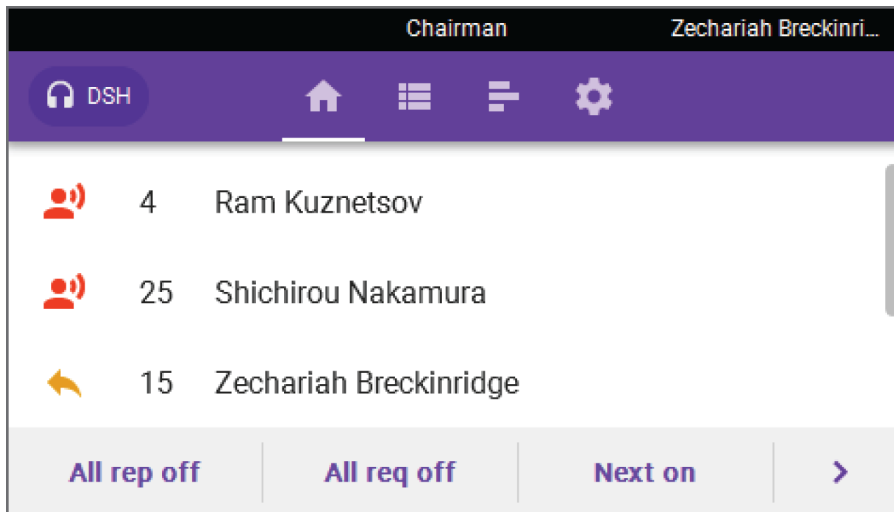
Dual Delegate consoles feature two Speak buttons, and no quick replies.



The Chairman console includes the following software buttons:

Reply	Adds or removes the Chairman or Delegate from the Reply list
Mute All	Mutes or un-mutes all conference units
Next On	Moves a speaker to the top of the Speak list

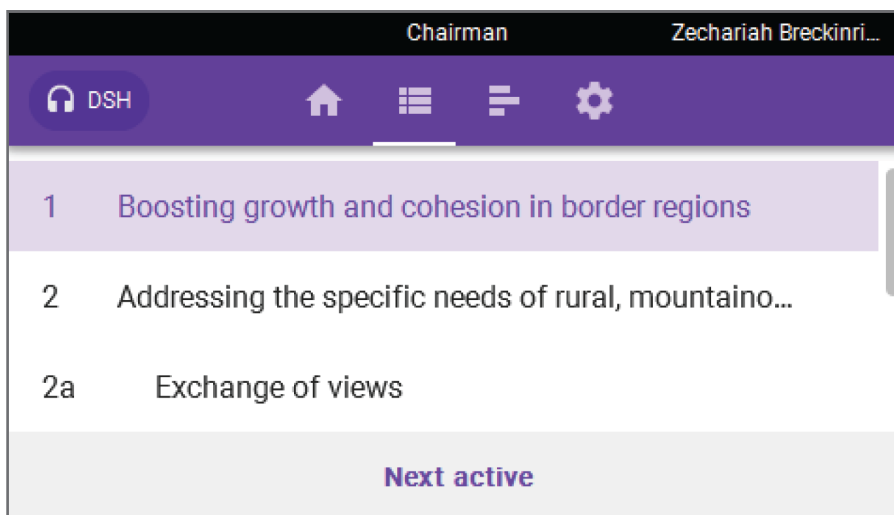
Exclusive	Mutes all Delegates on the Speak list
All Rep Off	Removes all delegates from the Reply list
All Req Off	Clears the Request list and disables adding new requests



## Agenda

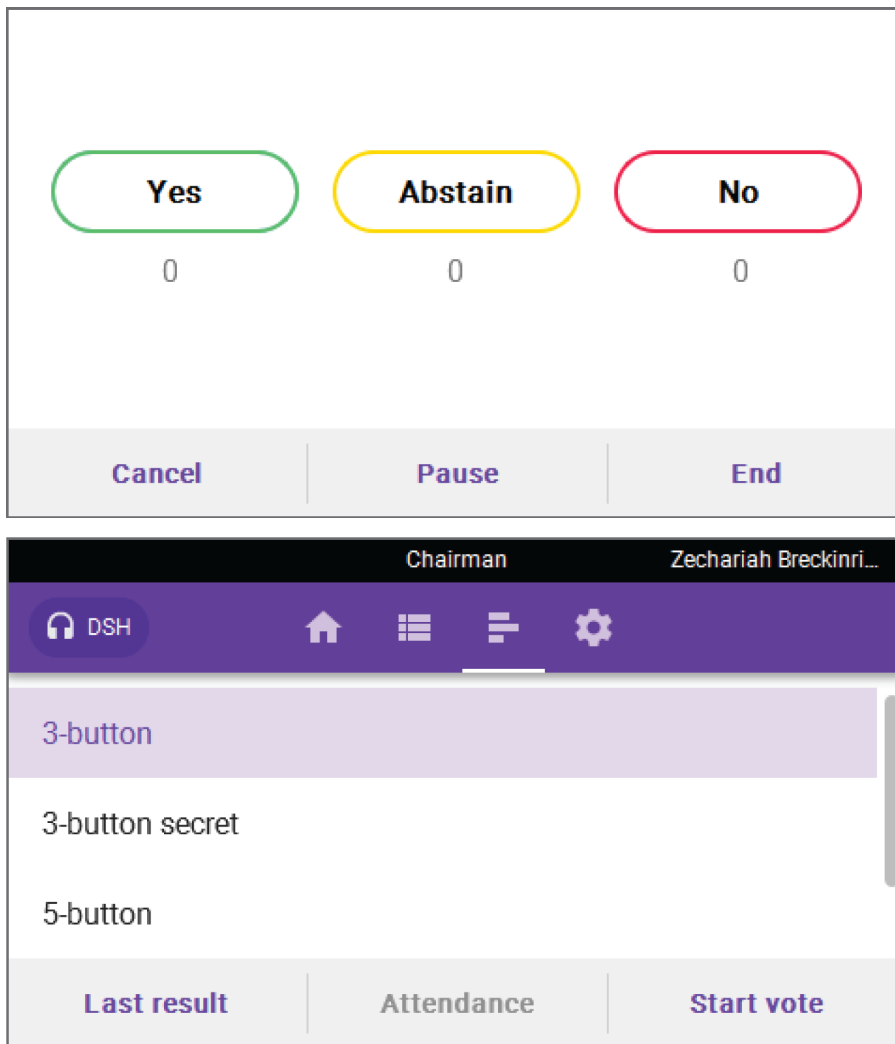
The Agenda screen displays the agenda for an active conference. Selecting an item displays full details. The agenda is created in the CCU.

The Chairman can set an active agenda item and start voting sessions:



## Voting Menu

The Voting menu is available in Chairman mode, and displays the available voting parameters. In stand-alone four parameters are available, while SW6000 enables all parameters defined in the CCU.



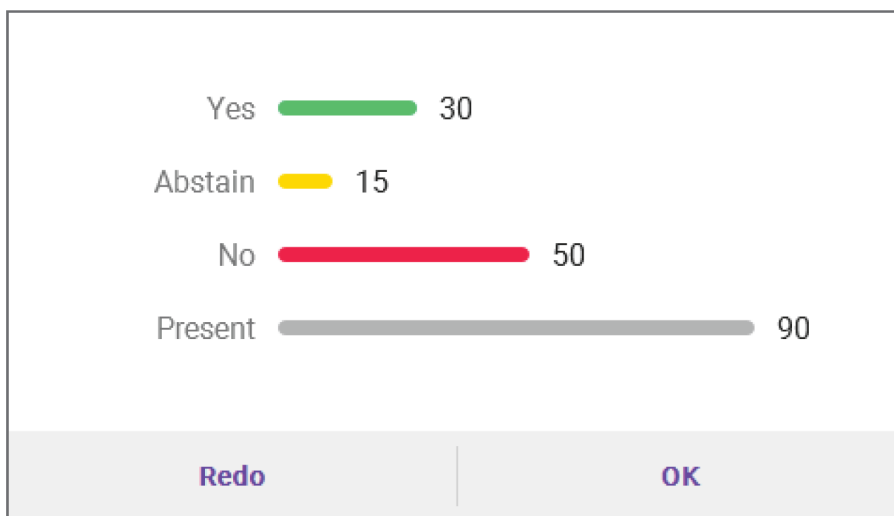
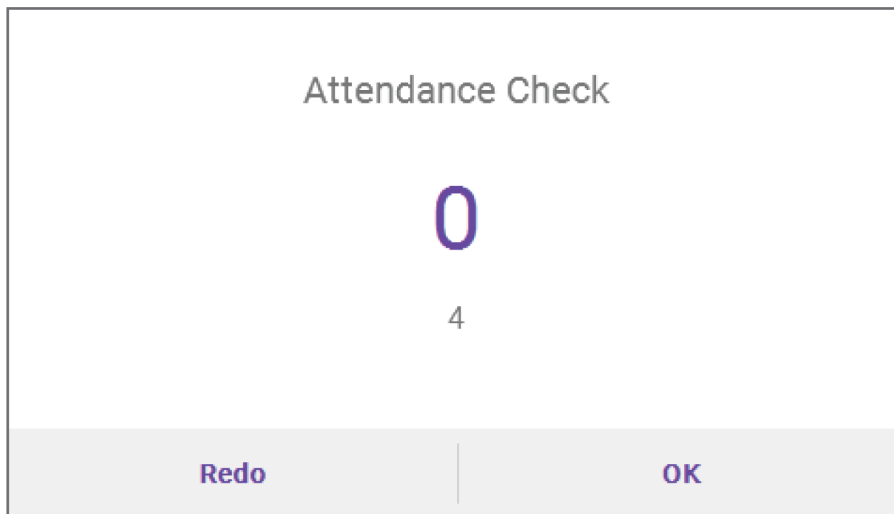
The Voting screen is automatically displayed on all conference units when a voting session or attendance check is started. Users with voting rights can cast their vote using the touchscreen.

## Results

The Results menu displays the latest voting or attendance check result. This menu is only available after a vote is finished.

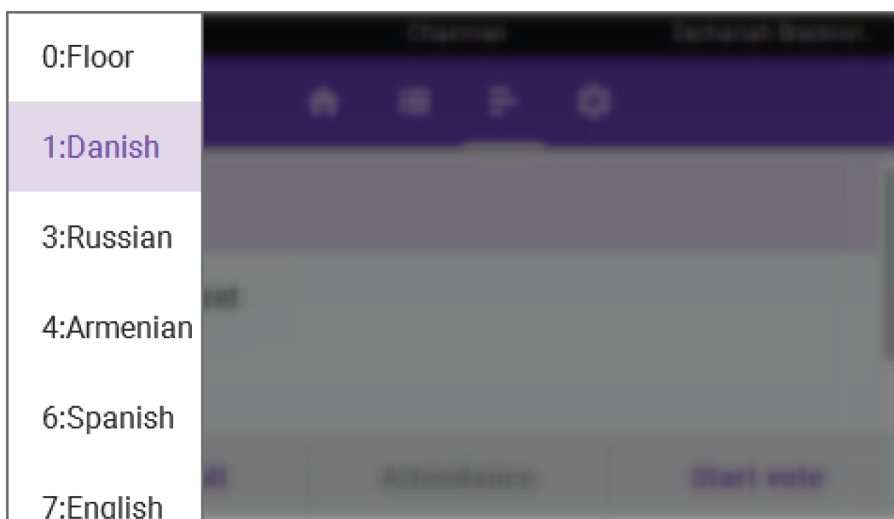
**Note:** Results are not available or displayed for cancelled voting sessions.





### Channel Selector

The Channel Selector allows the user to select from the available interpretation audio channels.



## Web Interface

For comprehensive management and remote control of the system, open the web interface on a computer or tablet. The central control unit (DIS-CCU) provides a web server for system control from a web browser on a networked computer. The web interface offers advanced parameters for setting up the system, and enables the chairman or moderator to manage microphones using participant names and seat numbers.

**Note:** The computer network is separate from the DCS-LAN conference unit.

The screenshot shows the DIS-CCU 6000 System Setup web interface. The browser address bar shows the URL `169.254.3.141/admin/index.cgi`. The interface is titled "DIS-CCU 6000 System Setup".

**Unit Count**

Chain	Found	Lost
A	0	0
B	0	0
C	4	1
D	1	0

**System Status**

Serial Number: 001.047.195

Serial Number	Chain	Type	State
001.047.195	C	Delegate	Active
000.239.027	C	Delegate	Active
001.208.131	C	Delegate	Lost
001.115.160	C	Delegate	Active
000.239.135	C	Chairman	Active
002.017.077	D	5900 Unit	Locked-Incompatible unit

Remove Unregistered Units

SHURE Copyright © 2015 - www.shure.com dis-ccu.local

### DCS 6000 Web Interface

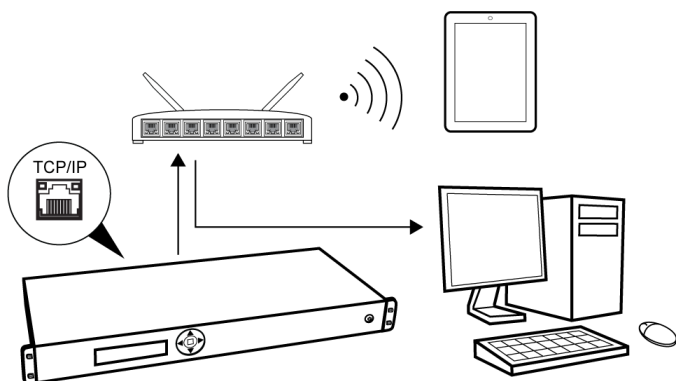
### System Requirements

For best performance, always update the browser to the latest released version. The following browsers function properly with the system interface:

- Internet Explorer (IE) 8+
- Firefox 10+
- Safari
- Chrome
- Opera

### Open the DIS-CCU System Interface

Follow these instructions to open the browser interface on a computer.



## Connect to the CCU

1. Connect the computer to the TCP/IP port on the CCU.
2. Power on the equipment.
3. Assign the computer to automatically obtain an IP address. This enables the computer to automatically connect to the CCU.
4. Acquire an IP address by selecting Dynamic from the LAN Setup > Acquire IP addr. window.
5. View the IP address: LAN Setup > IP address setup .
6. Open the internet browser in the computer.
7. Type 'http://IP-address', where 'IP address' is the address noted from the CCU.
8. The browser interface opens.

## Assigning the Network Address

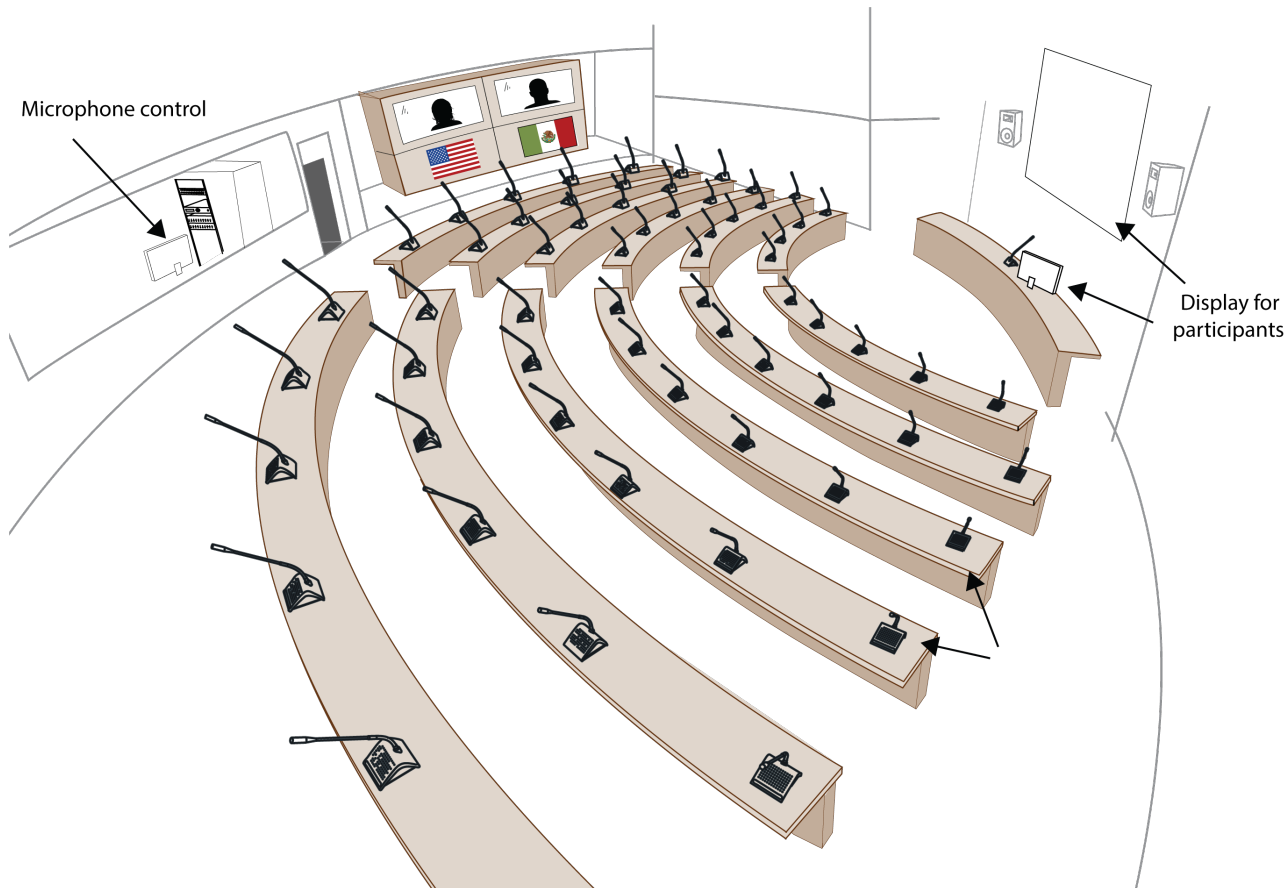
Access to the system interface is available from two network addresses: IP address and hostname. Typing either address into a browser will access the interface of the connected CU.

Manage the network address from the browser: System > LAN Setup

## Additional Pages for Meeting Participants

In addition to the administrator access to the web interface, there are two separate addresses useful to the participants during the meeting:

- Microphone control for speaker management
- Display-only page for meeting participants to view the speaker lists

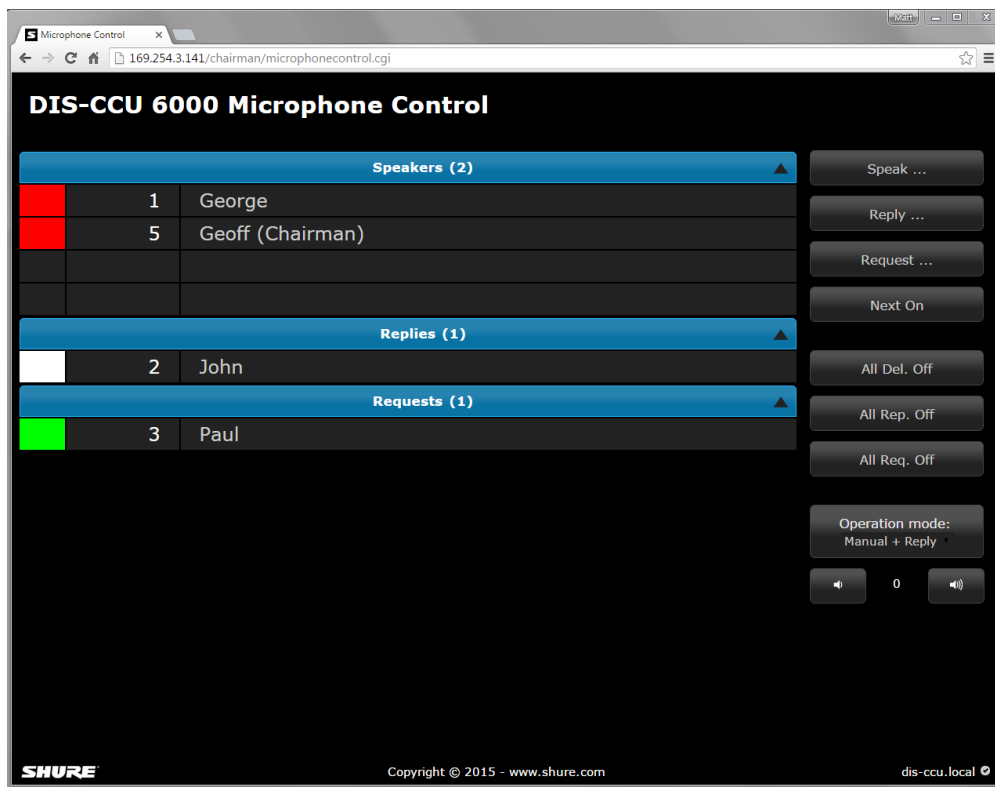


By default, anyone can access these views from a computer or mobile device connected to the network. To protect these pages, the administrator can assign a password to each from the Security page.

### Microphone Control Page

This page is dedicated for microphone control during the meeting. Use this view as a chairperson or meeting operator to manage speakers, speak requests, and replies.

For access, enter the IP address of the CCU, followed by /chairman (example: <http://172.17.11.137/chairman>).



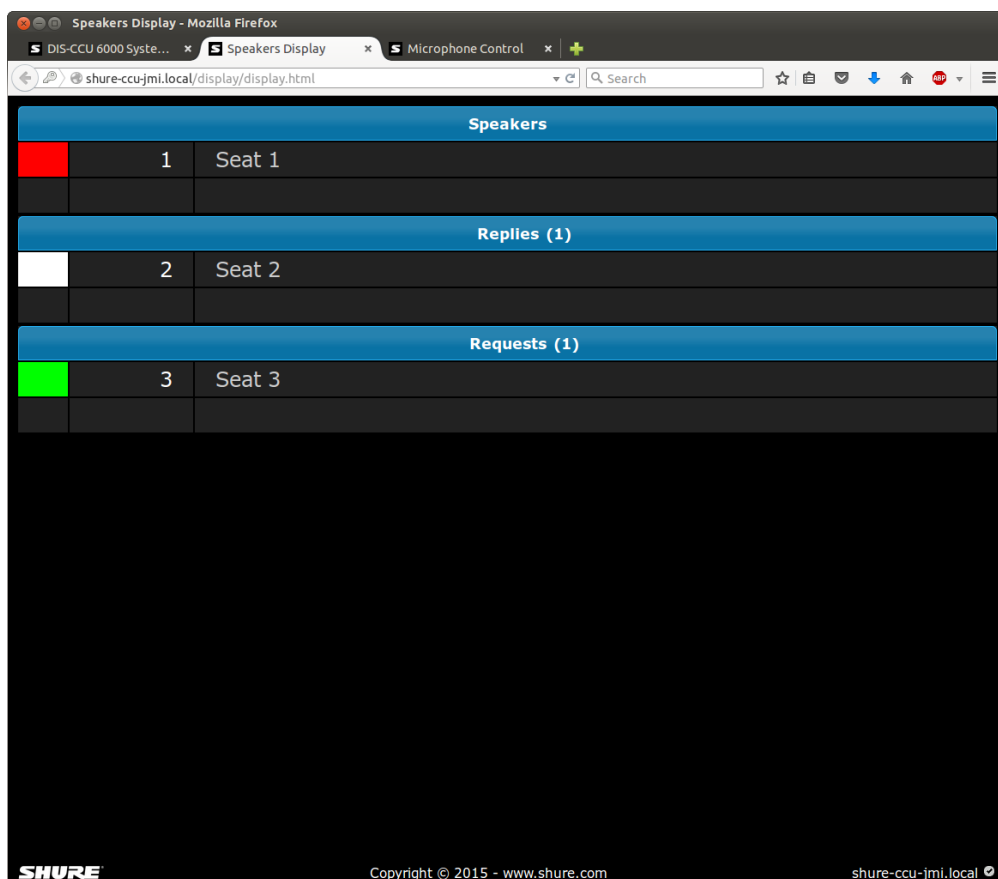
### Display Page

The display page is used to provide the meeting participants with a view of the speaker, speak request, and reply lists.

For access, enter the IP address of the CCU, followed by /display (example: <http://172.17.11.137/display>).

**Tip:** Put the page in full-screen mode during the meeting:

- PC: F11
- Mac: ctrl + cmd + f



## Language Setting

The browser interface is supported in a variety of languages. Go to **System > Language** to select the desired language.

Albanian	Shqip
Arabic	اللغة العربية
Bosnian	Bosanski
Bulgarian	български
Chinese (Simplified)	中文 (简体)
Chinese (Traditional)	中文 (繁體)
Croatian	Hrvatski
Danish	Dansk
English	English
French	Francais

German	Deutsch
Greek	Ελληνική
Icelandic	Íslenska
Italian	Italiano
Japanese	日本語
Korean	한국인
Macedonian	македонски
Montenegrin Cyrillic	Црногорски
Montenegrin Latin	Crnogorski
Norwegian	Norsk
Persian	فارسی
Polish	Polski
Portuguese	Português
Russian	русский
Serbian Cyrillic	Српски
Serbian Latin	Srpski
Slovenian	Slovenski
Spanish	Español
Swedish	Svenska
Thai	ภาษาไทย
Vietnamese	Tiếng Việt

## Setting the Operation Mode

For most installations, the 'Operation Mode' for all units is set to use the system mode 'Use CU mode'. It means that the operation mode for the units is following the system modes, i.e. if the system is running in 'Manual mode' the Delegates Units will run in Manual mode.

When assigning units to run 'Use CU modes' the modes are found in the following table:

Unit	Operation mode	Interrupt ability
Chairman	Automatic	<=
Delegate	Use CU mode	Use CU mode
VIP	Automatic	Use CU mode

However for certain application, it is desirable to assign individual "operation modes", where the units follow the individual mode settings independent of the "System Setting".

For example, the following "Units" can be created:

Unit	Operation mode	Interrupt ability
No Speaking Rights	Does not matter	Does not matter
VIP unit	Automatic	<
Secretary	Automatic	<
Delegate FIFO This unit will interrupts other delegates if the 'Maximum speaker' are reached	Use CU Mode	<=
Speaker stand This unit can always turn on except if 8 units with 'Speak priority' = 5 is open	Automatic	<=

## Security

MXC components use a proprietary codec algorithm to prevent unauthorized devices from listening to the audio signal. To further protect the meeting, assign a password to the browser interface and enable security features on wireless routers.

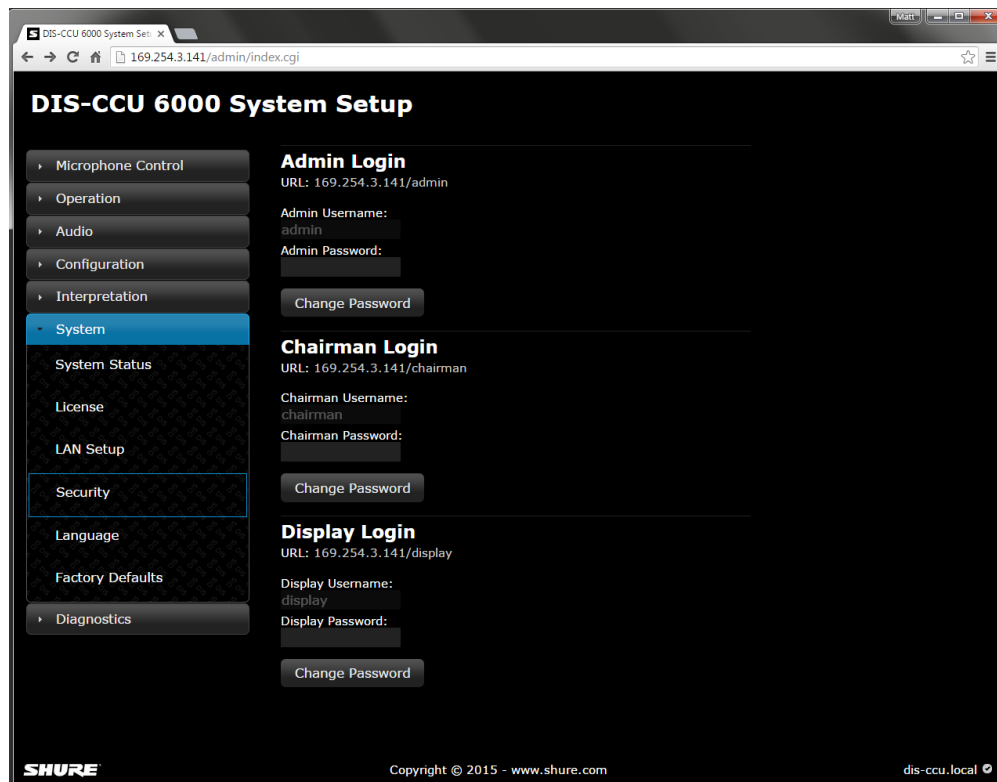


## Password Protect the Browser Interface

You can assign a password to restrict access to the browser interface. An independent password is assignable to each of the three interface addresses: administrator, chairman, and display.

1. Sign into the browser interface as an administrator.
2. Go to the Security page ( `System > Security` )
3. Enter a password.
4. Select Change Password to save the login information.

**Note:** passwords are cleared when the unit is reset from the CCU hardware.



## Assigning Names and Seat Numbers

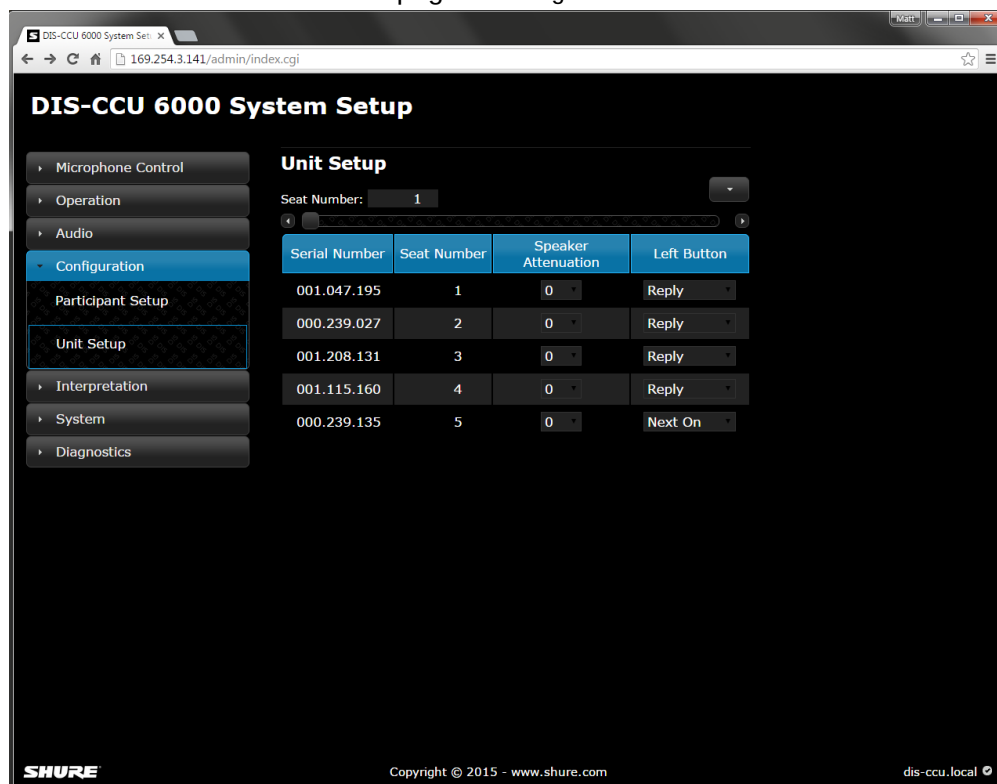
When the meeting begins, the chairman or moderator will need to refer to the participants by either name, seat number, or both. The proper assignment of names and seat numbers is critical to ensure the continuity of the meeting.

When logging in with the browser interface to an installation for the first time, each microphone unit appears with its default name. Units are automatically assigned a seat number. Chairman units also appear in the participant setup page. Use the participant setup page to match the units to the anticipated seating chart.

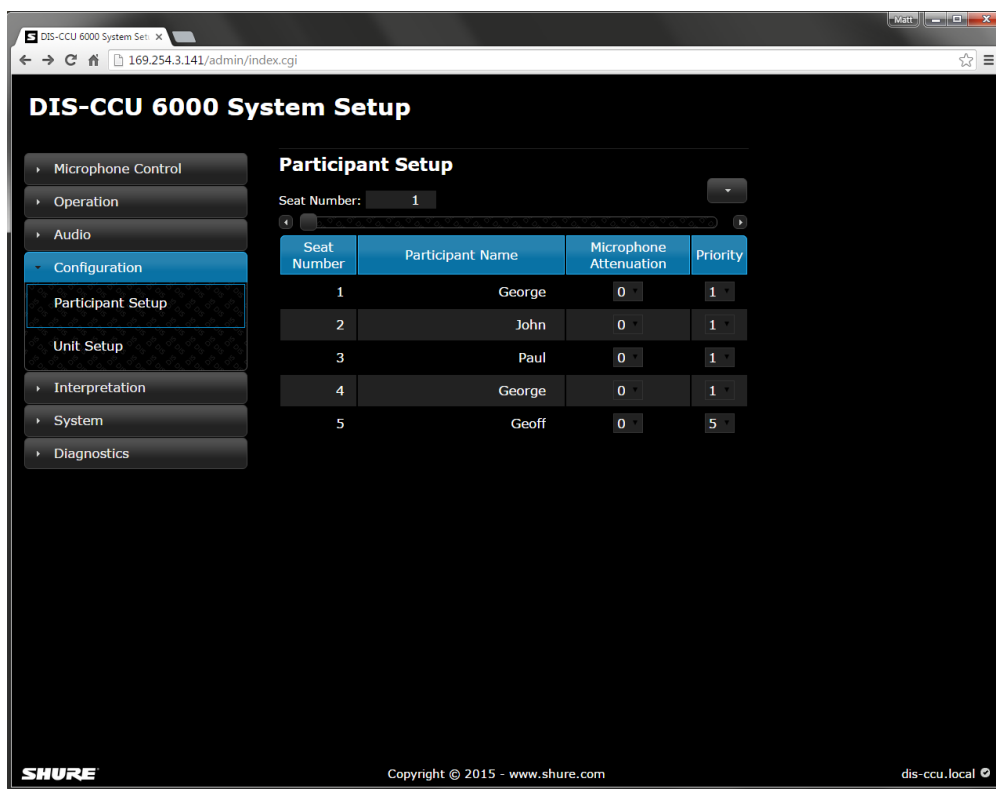
1. Make sure all units are connected and functioning.
  - Go to the System Status page for details `System > System Status`
  - All properly connected microphone units are listed with a default serial and seat number automatically assigned by the software.
  - Disconnected units will display as Lost and can be removed from the list by selecting Remove - Unregistered Units

2. Reassign seat numbers to match the actual seat numbers in the room or on your seating chart.

1. Go to the Unit to Seat Relation page Configuration > Unit to Seat Relation .



2. Match the entries in the seat table to the corresponding units in the room by placing the cursor over the seat number field. The light ring on the microphone flashes red.
  3. Change the seat number by clicking in the field.
3. Draw a seating chart, or diagram, that represents the room. Number each seat that requires a microphone unit. Add participant names to the seating chart.
4. Go back to the Participant Setup page Configuration > Participant Setup and change the descriptions next to the assigned seat numbers to the appropriate participant names.



## Program the User Type

MXC discussion units are programmable, changing the function of the control buttons to support different user types. The three types are chairman, delegate, or interpreter, each requiring unique control functionality. The setting is stored in the unit, and persists after a power cycle.

**Note:** Flushmount units are not programmable as interpreter stations. Use the portable MXCIC unit for simultaneous interpretation.

Program the portable units by pressing the volume buttons and scrolling to the desired mode.

1. Power on the unit by properly connecting it to the DCS-LAN chain.
2. Press and hold the '-' and '+' volume buttons. The Speak light flashes to indicate the unit is ready for programming.
3. While continuing to press the volume buttons, press the channel scroll to the unit type. The type is indicated by the combination of channel LEDs; see the table below.

## Changing Unit Type

Unit Type	Ch. 1	Ch. 2
Delegate with mute	Off	Off
Delegate without mute	On	Off
Chairman	Off	On

Unit Type	Ch. 1	Ch. 2
Interpreter	On	On

## System modes

The MXC conference units work in different modes, according to the settings of the system.

The “System Operation Mode” also called 'CU mode' determines the behavior of the microphone system. The mode is set on the DIS-CCU.

The following modes are available when the DIS-CCU runs standalone(PC with SW6000 has never been connected):

Automatic	<p>Auto (or Automatic) mode allows for the microphone units to be switched on immediately upon pressing the microphone ON/OFF button.</p> <p>This is indicated by a red light in the 'Speak' lamp in the microphone unit. Pressing the microphone ON/OFF button again will turn the microphone off.</p> <p>If the 'maximum speakers (delegates)' is reached, the speak request will be rejected.</p> <p>Microphones with Chairman priority will always be turned on (a Chairman Unit is always in Auto or VOX mode).</p>
FIFO	<p>FIFO is an automated mode. The microphone unit functions in the same way as <i>automatic</i> mode as long as the number of turned on delegate units is less or equal to the selected 'maximum speakers'.</p> <p>When the maximum number is reached, the next delegate pressing the <i>ON/OFF</i> button will be put in the top of the request queue. The green 'Request' lamp flashing indicates this.</p> <p>More delegates will be put in the request queue when they press their ON/OFF buttons, until the maximum of requests is reached. Their green 'Request' lamps will light up steadily.</p> <p>When one of the active microphone units is switched off, the first delegate unit in the queue is automatically switched ON, and the next delegate unit in the queue will flash with the green 'Request' lamp.</p> <p>This mode will normally be used with only 1 as maximum speakers.</p> <p>Microphones with Chairman priority will always be turned on directly.</p>

Manual	<p>Manual mode features a request list, where 'Delegates' are inserted in a queue upon pressing the microphone ON/OFF button. This is confirmed by green light in the 'Request' lamp in the delegate unit. It is possible to cancel the request by pressing the button again.</p> <p>The microphone can only be switched on from a PC running SW6000 software, from the MXC640 (Chairman unit) or from a control system like AMX or Crestron. This will be indicated by red light in the 'Speak' lamp in the microphone unit. At this point the delegate can switch off the microphone by pressing the ON/OFF microphone button.</p> <p>Microphones with Chairman priority will always be turned on directly.</p>
VOX	<p>VOX, voice activation mode, allows for the microphone units to be switched on automatically if speaking in the microphone or by pressing the microphone ON/OFF button.</p> <p>This is indicated by a red light in the 'Speak' lamp in the microphone unit. Pressing the microphone ON/OFF button again will turn the microphone off.</p> <p>The microphone turns of automatically after finished talking after the time defined in the "Release Time" setting, which is normally 4 seconds. The microphone can also be turned off by pressing the ON/OFF button.</p> <p>A Chairman Unit is always in Auto or VOX mode.</p> <p><b>Please note that the MXCMIU and units operation in a 'Microphone Sharing' mode cannot run in VOX mode.</b></p>

## Saving setting in the DIS-CCU

If individual settings are to remain in the units after the SW6000 is closed, the settings can be stored in the DIS-CCU by saving the setting.

When saving the configuration the changes in the settings, which have been done in the various menus in DIS-CCU, at the MXCIC Interpreter Sets, at AO 6004/6008 Audio Unit or in the Conference Units (Individual settings) will be saved in the 'Flash' memory in the DIS-CCU.

Also the serial number and type of all units connected to the DIS-CCU at the time of saving the configuration will be saved in the 'Flash' memory in the DIS-CCU.

When 'loading' a configuration the last settings, which has been saved in the 'Flash' memory in the DIS-CCU will be re-loaded to the DIS-CCU, to the MXCIC Interpreter Sets to the AO 6004/6008 Audio Unit and to the Delegate Units.

When switching the power to the DIS-CCU OFF and then ON, the last saved setting will also be loaded.

# Audio Settings

## Floor Mix

When a microphone is turned on, the audio is routed to the main mix (Group A) by default. This mix is often referred to as the floor mix because it transmits the audio from the talker to the rest of the participants in the meeting. Interpreters also listen to the floor to provide language interpretation for multilingual meetings.

By default, the floor mix is routed to the loudspeaker and headphone output (Channel 0) of each connected microphone unit.

## Route Microphones to Groups

Go to the Group Setup page [Audio > Group Setup](#) to view or modify the microphone routing.

For each microphone, select one of the following options:

- Group A only (default)
- Group A + another group
- Group B, C, D, E, F, G, or H
- None

**DIS-CCU 6000 System Setup**

**Group Setup**

Group Setup

Seat Range: 1 - 4

Groups: A B C D E F G H

Apply

Assign multiple units at once

Seat Number: 1

Seat Number	Group A	Group B	Group C	Group D	Group E	Group F	Group G	Group H
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Individually assign units to a group

SHURE Copyright © 2015 - www.shure.com dis-ccu.local

## Floor Mix on the Loudspeakers

Loudspeakers are included in most microphone units for localized sound-reinforcement of the meeting. When a participant uses their microphone, their speech is heard at other unit loudspeakers. This improves speech clarity in large rooms and reduces typical problems associated with sound reinforcement systems.



### A Loudspeaker for Each Participant

Each participant can listen to the meeting on a personal loudspeaker attached to the microphone unit.

Note: To avoid feedback, the loudspeaker is turned off when that microphone is active.

### Loudspeaker Adjustment

Loudspeaker volume is a system setting that applies to all connected units. Volume is adjustable from -0 dB (no attenuation) to -40 dB, including off (mute). To adjust the volume:

From the Browser Interface	Go to the Loudspeaker Control page ( <a href="#">Audio</a> > <a href="#">Loudspeaker Control</a> )
----------------------------	--

From the CCU	Scroll to the Loudspeaker Menu ( loudspk. control > loudspk. volume > db )
--------------	--

## Headphone Channels

Microphone units include a headphone output for listening to interpreter channels or other participants on the floor channel. Each participant chooses their channel from the microphone unit channel selectors.

Channels 1 - 31 are dedicated for language interpretation. Participants select one of the channels to listen to their language during a multilingual event. The audio source comes from interpreter stations transmitting onto their selected channel. See the Interpretation section of this guide for more details.

Channel 0 (the floor channel) is typically selected by interpreters to provide simultaneous interpretation of those addressing the floor. This channel is also selectable by other participants to listen to the floor channel on headphones (channel 0 = LEDs off).

1. Connect headphones to the headphone jack on the side of the microphone unit.
2. Select a channel by pressing the selector buttons on the front of the unit.
3. Adjust the volume of the headphones using the unit volume controls.

## Audio Source for the Loudspeaker and Headphones

By default all microphones are routed to loudspeaker and Floor mixes.

To change the audio source:

1. Route microphones to Group A to add them to the floor mix (all selected by default) Audio > Group Setup



**DIS-CCU 6000 System Setup**

Microphone Control  
Operation  
**Audio**  
Loudspeaker Control  
Input Control  
Output Control  
**Group Setup**  
Ambient Microphone  
Configuration  
Interpretation  
System  
Diagnostics

**Group Setup**

Group Setup

Seat Range: 1 - 4

Groups: A B C D E F G H

Apply

Seat Number: 1

Seat Number	Group A	Group B	Group C	Group D	Group E	Group F	Group G	Group H
1	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Group A = Floor

SHURE Copyright © 2015 - www.shure.com dis-ccu.local

2. Select the audio sources for the loudspeaker and Channel 0 (headphone) Audio > Input Control :
  - Floor (default)
  - Audio In 1
  - Audio In 2

**DIS-CCU 5900 System Setup**

Microphone Control  
Operation  
**Audio**  
Loudspeaker Control  
**Input Control**  
Output Control  
Group Setup  
Configuration  
System  
Diagnostics

**Input Control**

Audio In 1 Gain: 0 dB 10 dB

Audio In 2 Gain: 0 dB 10 dB

Audio In 1 Volume: Off

Audio In 2 Volume: Off

Loudspeaker

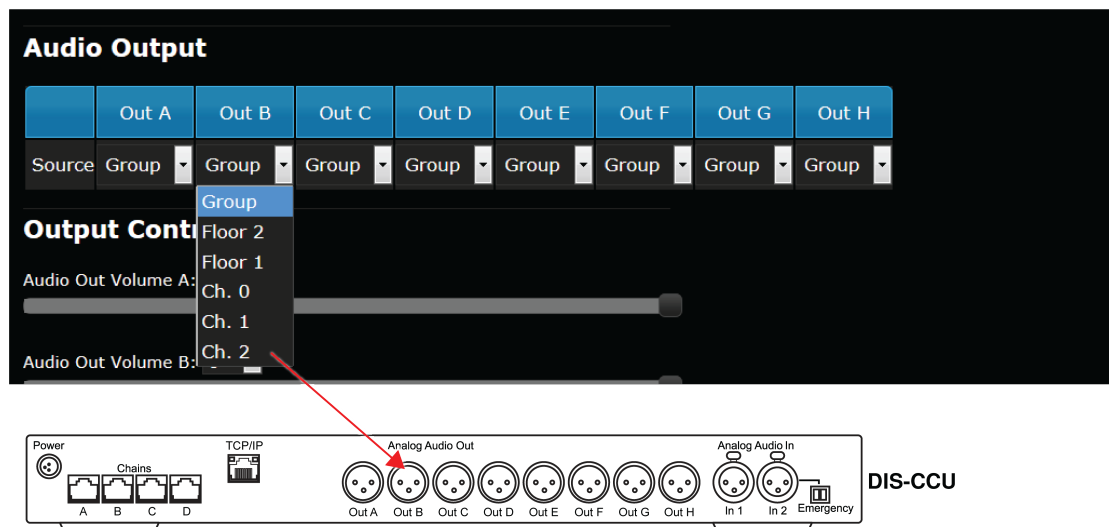
Headphone

	Loudspeaker	Ch. 0	Out A (Group)
Audio In 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Audio In 2	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floor	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

SHURE Copyright © 2015 - www.shure.com dis-ccu.local

## Analog Audio Outputs

Eight analog outputs are available for recording, language distribution system, teleconferencing unit, or an external PA system.



### Eight Analog Outputs

Select the audio source for each analog output

Go to **Audio > Output Control** and choose from the following options:

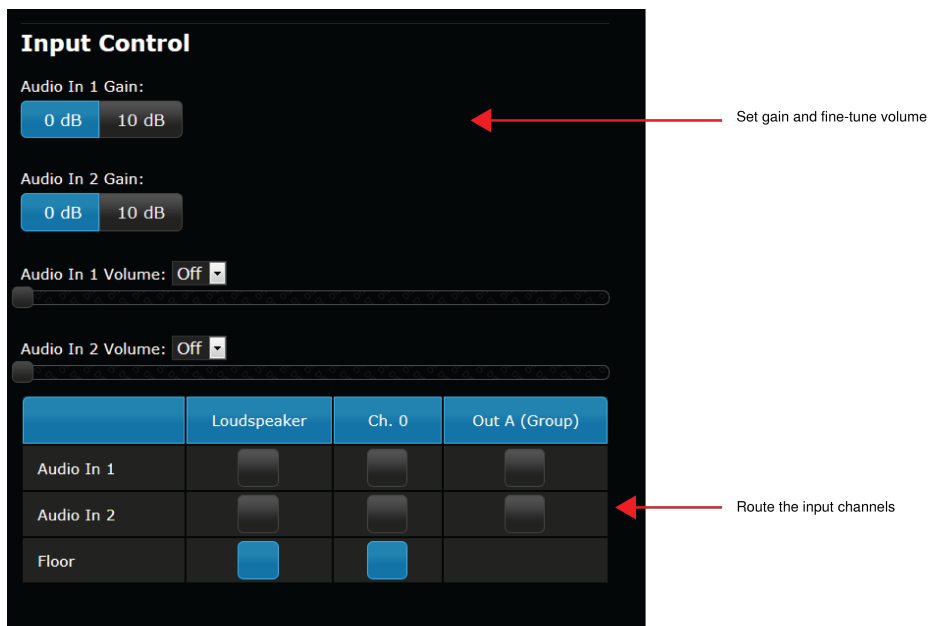
- **Group:** Eight separate groups for isolating specific microphones. This selection corresponds to the groups configured from the **Group Setup** page.
  - Note:** If the group buss is not used for the corresponding XLR output, it is unavailable in the routing matrix.
- **Ch. 1 -31:** Interpretation channels
- **Floor:** The audio from all open microphones that are routed to Group A (floor mix). There are three variations on this mix to chose from:
  - **Ch. 0:** Headphone mix with AGC, useful for sending to an IR language distribution system.
  - **Floor 1:** Loudspeaker mix, useful for sending to a PA or broadcast equipment.
  - **Floor 2:** Loudspeaker mix with volume attenuation ( **Audio > Loudspeaker Control** )

## Adding an External Audio Source

Two inputs are available on the DIS-CCU for adding an external audio source to the system, often useful for teleconferencing or internet calling.

1. Connect a line-level audio source, such as the audio output of a computer, teleconferencing unit, or wireless microphone system to the audio input on the DIS-CCU back panel.
2. Open the web interface to **Audio > Input Control** .
3. Select the input gain according to the output of the external device. If necessary, select 10 dB for a slight gain boost.
4. Select the routing for the audio channel:
  - **Loudspeaker:** to all microphone unit loudspeakers
  - **Ch. 0:** to the headphone output on the microphone unit

5. If desired, route the channel to Output A (Group) to output a blend of the external source with the microphone units:
  - **Deselect** for teleconferencing or signal processing to avoid a feedback loop
  - **Select** for a wireless microphone to be blended with other microphone unit audio
6. Adjust the volume of the audio input to mix naturally with speech levels of the microphone units.



## Input Control Page

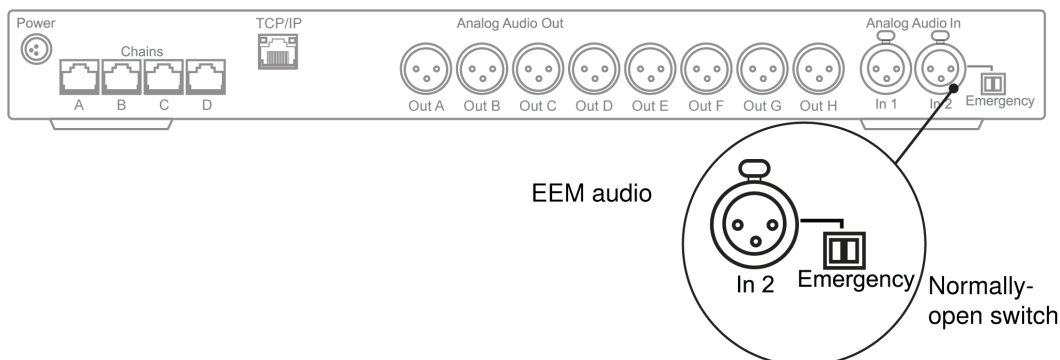
Audio > Input Control

## Emergency Audio Signal

To prepare for an emergency, connect an Emergency Evacuation Message (EEM) audio signal to Input 2. The block connector provides a 'normally-open' switch that when closed, distributes the emergency signal to the loudspeakers and all input and output connections.

**Important:** When the switch is used for Input 2, the EEM audio signal bypasses the volume and on/off settings. Control the volume of the EEM signal at the source output.

1. Connect the EEM signal to Input 2.
2. Connect a switch to the block connector.
3. Close the switch and test the audio signal. Adjust the volume at the audio source to the desired level.



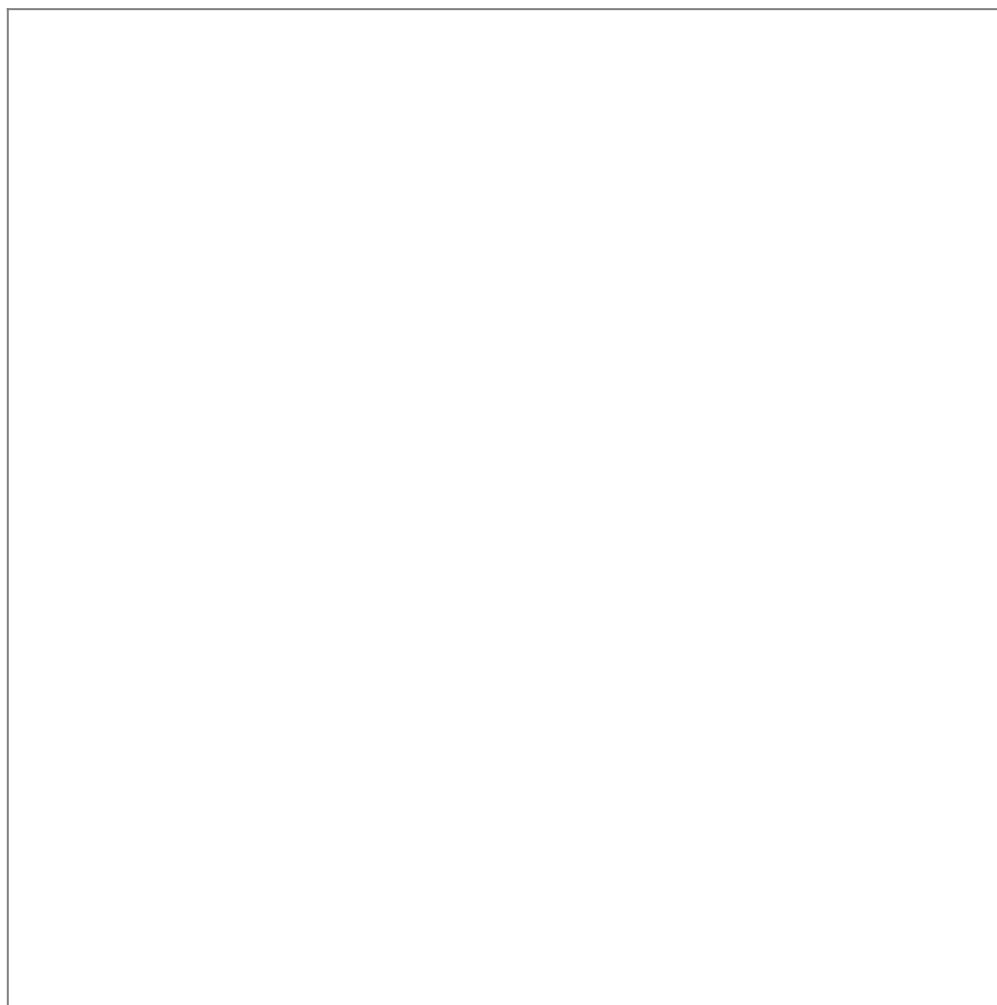
---

## Adding Ambient Sound

The MXCMIU multi-interface unit's Ambient mode provides natural noise from the conference room during pauses in speech or brief breaks between agenda items. The ambient room sound informs participants that these pauses in speech are not a connection or audio issue, which is especially helpful for interpreters or other participants that are not in the same room as the conference.

Activate and adjust the level of the microphone from the FUU or web interface: Audio > Ambient Microphone . These settings shall remain persistent in the MXCMIU across power-cycles and re-connections.

**Note:** The ambient microphones switch OFF automatically when the sound source is an external system, such as a laptop or videoconference system.



---

## Participant Microphone Settings

Several factors may affect the meeting requirements and the manner in which the meeting is run: room size, number of participants, formality of the event, and amount of technical support on staff. Adjust these operation settings in the DIS-CCU to best fit the meeting needs:

- **Microphone operation mode:** how participants are allowed to address the floor
- **Reply mode:** briefly comment to the current speaker without altering the request queue
- **Number of simultaneous speakers:** control the discourse by limiting the number of speakers at once

- **Microphone override:** behavior of the microphone activation when the speaker list is full

## Microphone Operation Modes

The microphone operation mode determines how participant microphones function during a meeting.

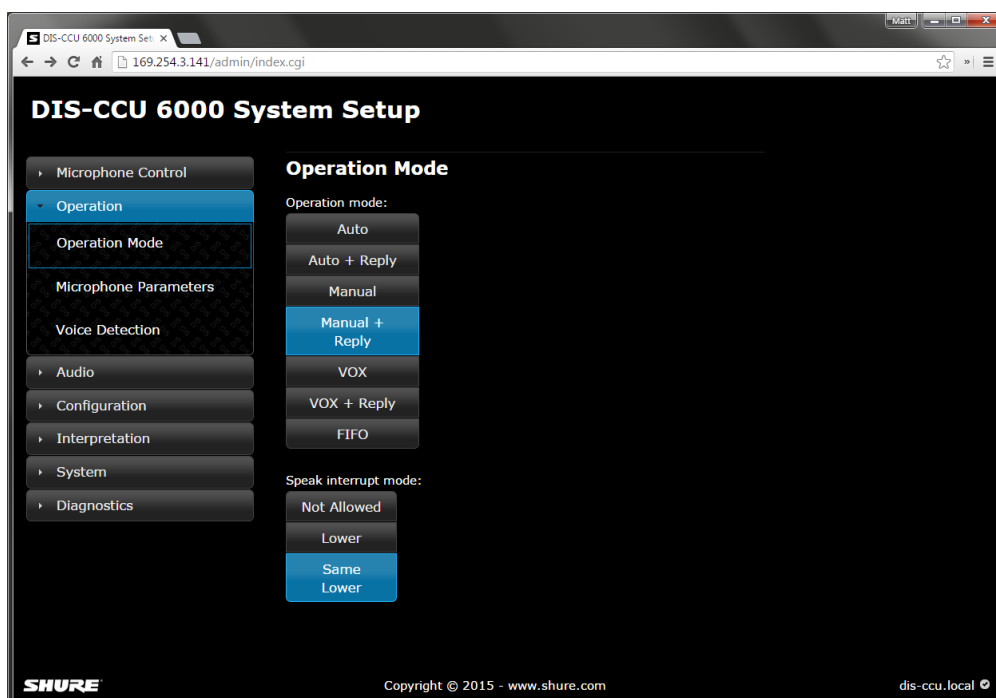
### Description of Operation Modes

Name	Brief Description	To Activate the Microphone...	Request Queue
<b>Auto</b> (default setting)	Automatic	Press the speak button to turn on the microphone.  There is no request queue; if the speaker list is full, the participant microphone does not turn on.	No
<b>VOX</b>	Voice activated	Voice activate or press the speak button to turn on the microphone. The microphone automatically turns off after the talker is finished.  There is no request queue; if the speaker list is full, the participant microphone does not turn on.	No
<b>FIFO</b>	Automatic queue	Press the speak button to turn on the microphone. If the list is full, it is added to the request queue in chronological order. Once there is room in the speaker list, the next microphone automatically turns on.	Yes
<b>Manual</b>	Managed queue	Request to speak by pressing the speak button. The chairman manages the request queue and manually turns on participant microphones.	Yes

Replies can be added to the operation mode to allow brief comments to the current speaker(s). Auto, Vox, and Manual modes can include Reply:

- Auto + Reply
- Vox + Reply
- Manual + Reply

See the Reply section with more details.



Operation > Operation Mode

## Change the Operation Mode

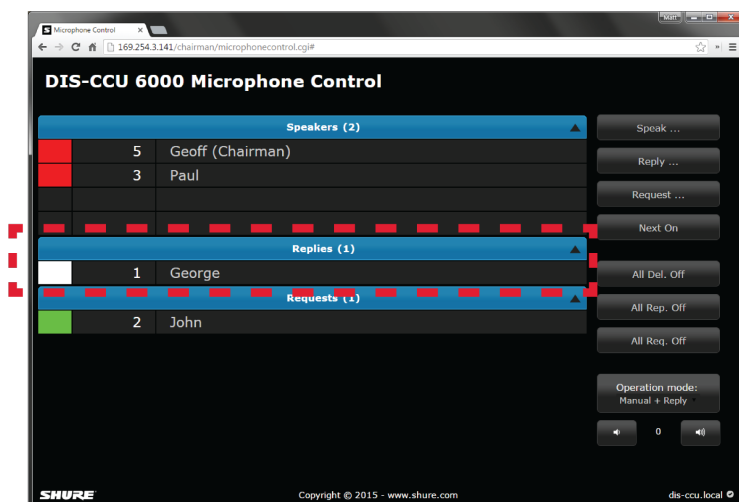
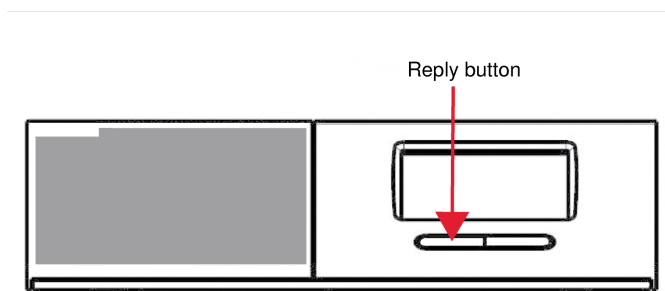
- CCU hardware: Operation > Operation Mode
- Browser interface: Operation > Operation Mode or from the Microphone Control page

## Replies

The reply mode enables participants to briefly comment or ask a question to the present speaker. This allows a concise follow-up to the speaker without affecting the request queue.

On the participant microphone unit, the left button is reprogrammed to operate as a reply button. The participant presses the reply button to add themselves to the reply list, and the chairman or operator manually activates the reply.

**Note:** there is no microphone mute button in this mode.



## Unit Configured with Reply Button

Press the reply button to add the unit to the reply list.

The reply option can be added to Manual, Automatic and VOX modes ( `Operation > Operation Mode` ). In Manual mode, the reply list is cleared when the next request is turned on.

The MXC640 has advanced reply features, including up to 10 customizable reply buttons. The buttons can be labeled to specify the nature of the reply, such as a comment, question, or challenge.

## Normal operation

- **Attendance check**

When the yellow 'Yes/Present (+) LED' flashes alone, the user can present him to the system as 'Present' by pressing the 'Yes/Present (+) button'.

- **Cast a vote**

When all the yellow voting LEDs flash, the user can cast his vote, by pressing any of the three voting buttons.

The user can cast his vote or change a vote as long time as the voting session is on-going.

If the voting parameter is selected as 'Secret' (done in the SW6000) the LEDs stop flashing after the vote is cast, however the user can still change his vote, if needed.

## Voting functionality

Voting functionality is a feature where delegates can cast their votes to various subjects using the MXC Conference Units.

The various voting modes and voting functionality in general is explained in the SW6000 CAA User Manual. However the functionality directly related to the 'Control & Indications' in the units is explained here.

## Number of Active Microphones

To improve speaker management and clarity of the audio, there is a limit to the number of speakers at the same time. The number of active microphones is adjustable from 1 - 8. Once the limit is reached, a participant trying to turn on the microphone may be added to a request queue or denied access, depending on the microphone operating mode.

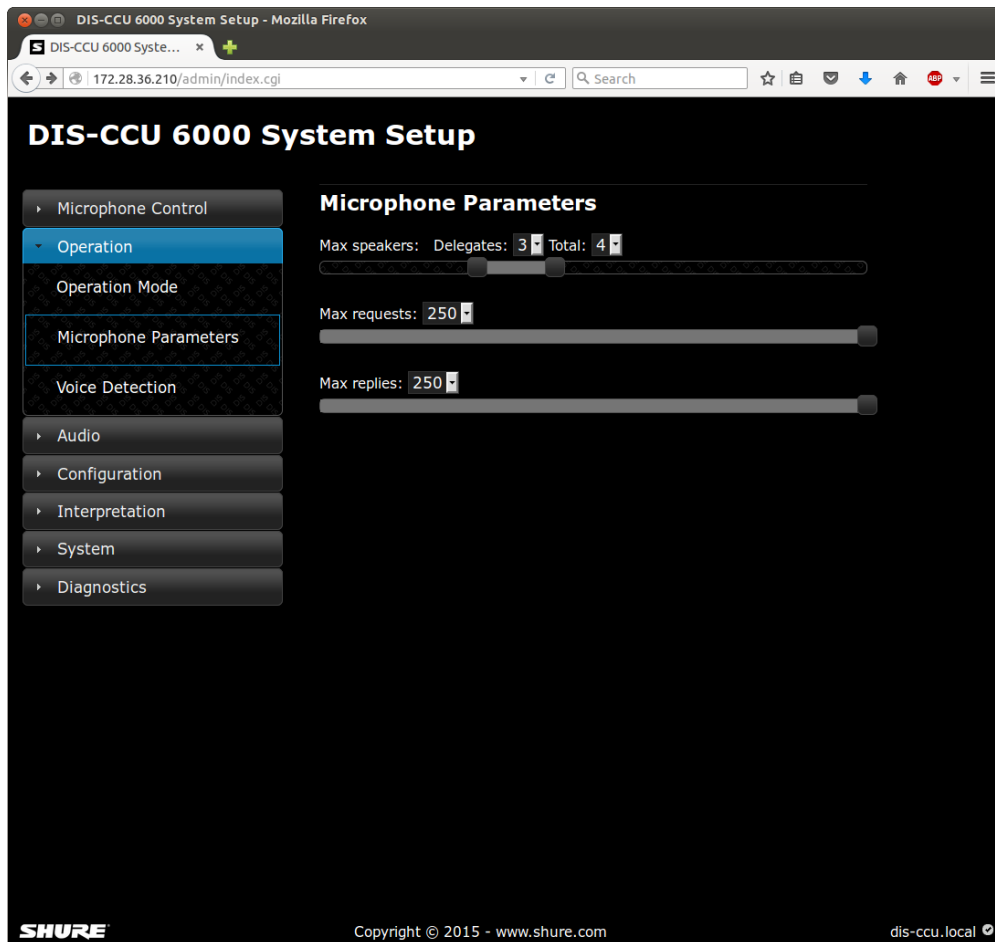
Go to `Operation > Microphone Parameters` to adjust several speaker settings:

**Note:** Interpreter units are always active and do not impact the speaker list.

Max speakers	<ul style="list-style-type: none"> <li>• <b>Total:</b> Total number of open participant units, including chairmen. This is the absolute maximum number of people that can address the floor at once.</li> <li>• <b>Delegate:</b> Number of delegate microphones that can be open at one time (excludes the chairman).</li> </ul>
Max Requests	Total number of participants that can be in the request queue at one time.

Max Replies

Total number of participants that can be in the reply queue at one time.



## Example Settings

### Chairman (Moderator) Can Speak At Any Time

Set the total number of speakers to one (1) higher than the maximum number of participants. If there are two chairmen, set the number to two (2) higher.

### Using FIFO Mode

First In, First Out (FIFO) mode automatically turns on microphones based on a chronological queue list. This mode works best if the maximum number of participants is set to one (1), so that the participant must wait to speak until the other is finished.

## Interrupt Mode

This mode determines the behavior of the microphone units when the speaker list is full.

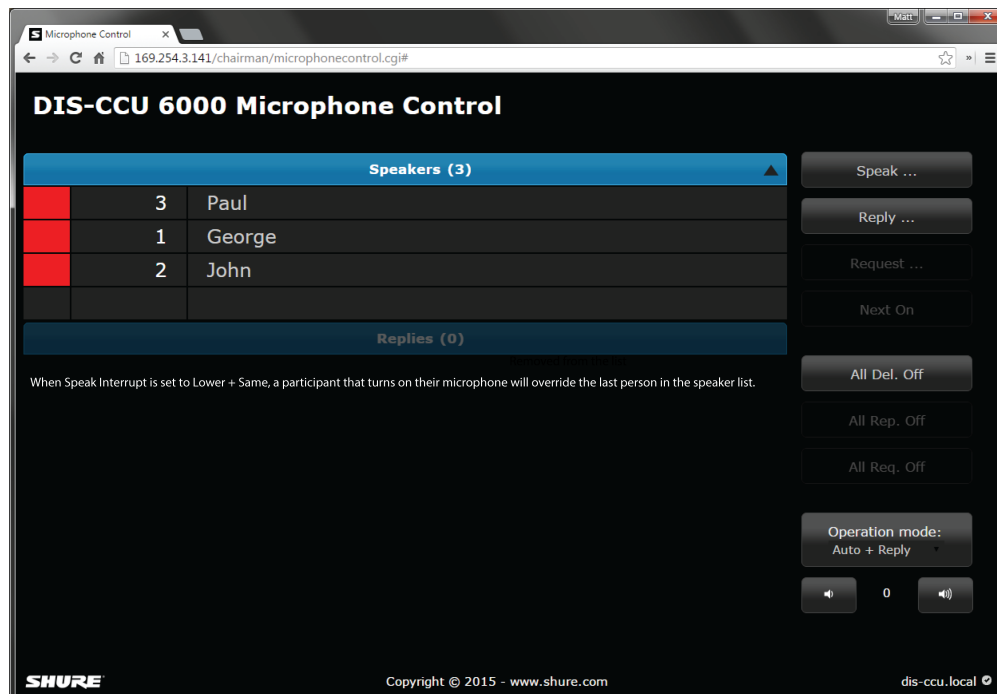
Go to **Operation > Operation Mode > Speak Interrupt Mode** to select from the following options:

- **Not Allowed:** A participant unit cannot turn on the microphone until a space is available in the speaker list.



- **Lower (default):** A participant with a higher speak priority (typically a chairman) can turn on the microphone even when the speaker list is full. This turns off the microphone of the participant that has been in the list the longest (at the bottom of the Speaker List).
- **Lower + Same:** A participant can turn on the microphone even when the speaker list is full. This turns off the microphone of the participant that has been in the list the longest (at the bottom of the Speaker List) and with an equal or lower priority setting.

To manually adjust the priority number, go to **Configuration > Participant Setup** and select a number from the priority column.

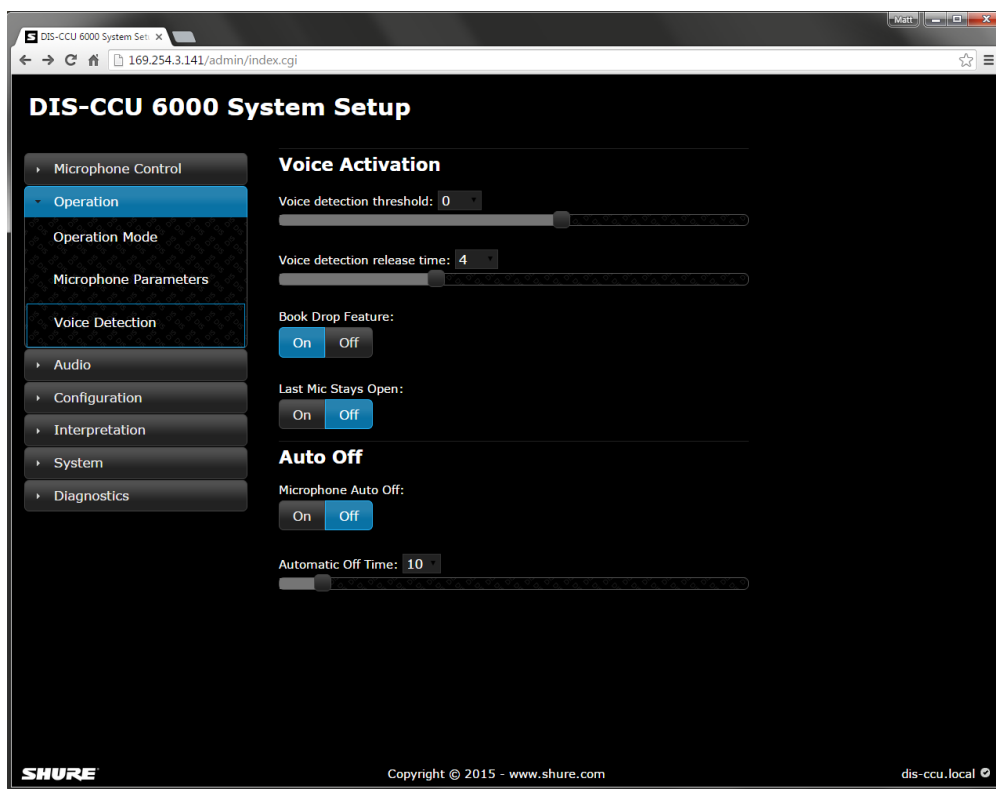


### Speaker List with a Maximum of 3 Speakers

When Speak Interrupt is set to Lower + Same, a participant that turns on their microphone will override the last person in the speaker list.

## Voice Detection

Adjust voice detection settings from **Operation > Voice Detection**.



## Voice Activation (VOX)

In VOX mode, the microphone activates automatically once a participant speaks. The mode is ideal for meetings that are more conversational, allowing back-and-forth communication that doesn't involve speak requests and button activation. The following settings allow VOX to be customized for the meeting:

<p>Voice Detection Threshold</p>	<p>Determines the input level (dB) that activates the microphone. Lower settings activate the microphone with a quieter source, while higher settings require a louder source to activate the microphone.</p> <table border="1" data-bbox="477 1283 1498 1503"> <tbody> <tr> <td>Default</td> <td>0 dB</td> </tr> <tr> <td>Minimum</td> <td>-12 dB</td> </tr> <tr> <td>Maximum</td> <td>8 dB</td> </tr> </tbody> </table>	Default	0 dB	Minimum	-12 dB	Maximum	8 dB
Default	0 dB						
Minimum	-12 dB						
Maximum	8 dB						
<p>Release Time</p>	<p>Determines how long a microphone remains active after a participant stops talking. The setting is selectable in 0.5 second increments.</p> <table border="1" data-bbox="477 1661 1498 1881"> <tbody> <tr> <td>Default</td> <td>4 seconds</td> </tr> <tr> <td>Minimum</td> <td>1 seconds</td> </tr> <tr> <td>Maximum</td> <td>10 seconds</td> </tr> </tbody> </table>	Default	4 seconds	Minimum	1 seconds	Maximum	10 seconds
Default	4 seconds						
Minimum	1 seconds						
Maximum	10 seconds						

Book Drop	To ensure that only the speech from a participant activates the microphone, turn on the book drop feature. This quickly turns off a microphone that has been accidentally activated from a loud noise other than speech.
Last Mic Stays Open	This setting ensures that at least one microphone is always activated. This is useful for video or audio conferences with echo-canceling equipment.

## Auto Off

This setting automatically turns off the microphone when the participant stops talking. This setting applies to systems in FIFO, Manual or Automatic modes. See [Operation > Voice Activation](#) to adjust the release time for that mode.

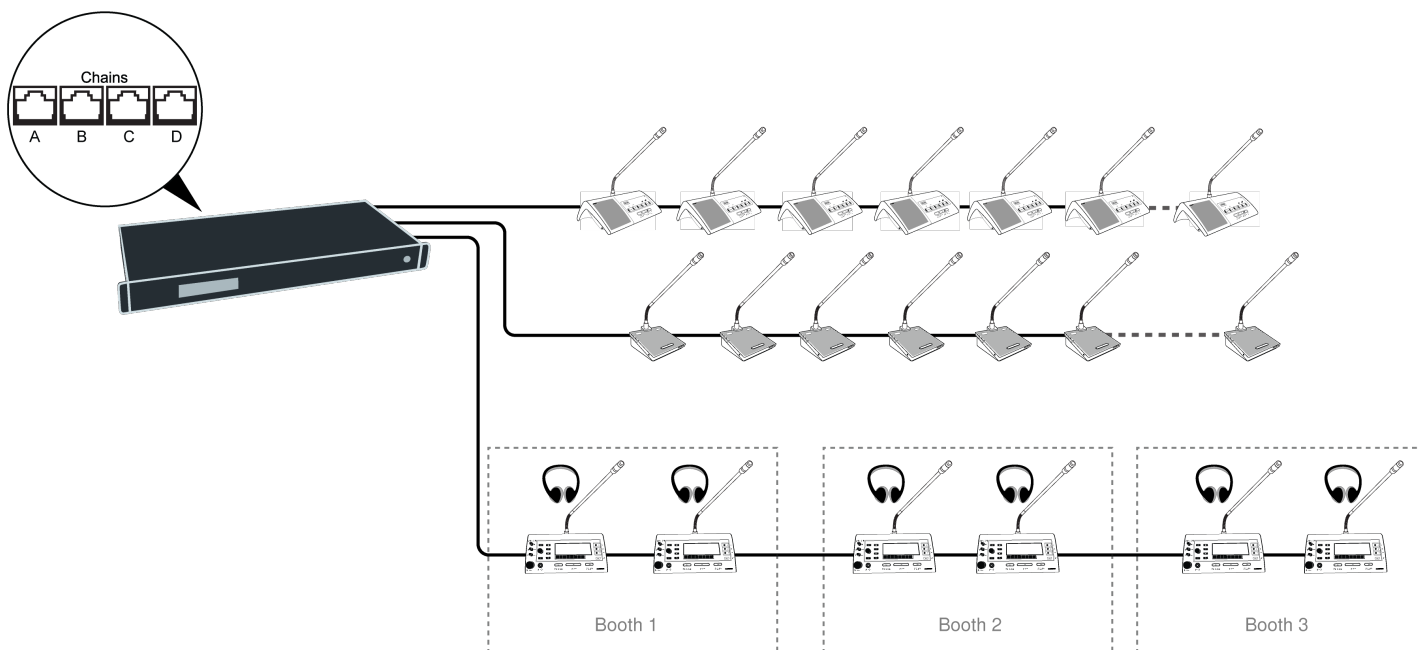
- Off (default)
- On

Automatic Off Time	The time for a microphone to turn off after the participant stops speaking.	
	Default	20 seconds
	Minimum	5 seconds
	Maximum	60 seconds

## Language Interpretation

Up to 31 channels are available for simultaneous interpretation of the meeting. The MXCIC interpretation unit connects to the same DCS-LAN network from the DIS-CCU, transmitting audio to independent language channels. Participants listen to their language on headphones connected to their respective conference unit.

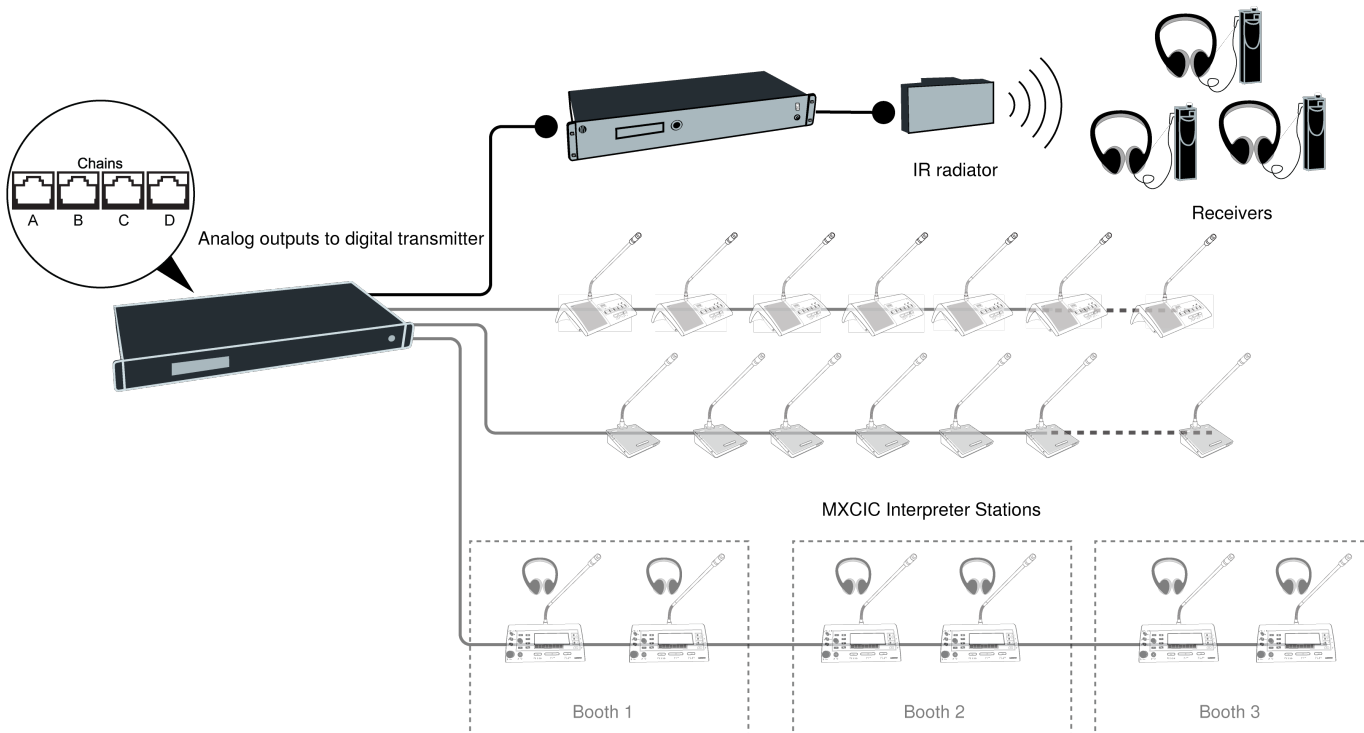
Four languages are provided with the FL6000 mode license, and can be expanded to 8, 16, or 31 with an additional license.



## Wireless Language Distribution

Provide additional monitoring access by connecting a wireless language distribution system to the one of the CCU audio outputs. Use the browser interface to route the desired interpretation channels or a subset of microphones to that group output.

The DCS 6000 Digital Infrared Language System transmits this audio signal to a number of portable listening devices.



Wireless Language Distribution

## Listening to Interpretation

Follow these steps to listen to one of the interpretation channels:

1. Connect headphones to the headphone jack on the conference unit.
2. Select a channel by pressing the selector buttons on the front of the unit.  
**Tip:** When no channel is selected, the Auto Floor option in the Settings menu automatically switches to floor audio.
3. Adjust the audio level of the headphones using the volume buttons.

## Normal Operation

- **Incoming Channel Selector Assignment**

To display available channel sources, press and hold a channel selector button. Rotate the selector to highlight the desired language source, and confirm the selection by pressing the selector. This workflow also applies to outgoing channels B and C, if permission is granted by the system administrator.

**Note:** Interpreters can only select from languages programmed into the system from the DIS-CCU or SW6000.

- **Volume Control**

Headphone and loudspeaker volume controls are adjusted using their respective volume knobs. Headphone sensitivity can be adjusted in the Settings menu.

## Set up Interpretation Channels

1. Purchase and install an additional feature license if more than 4 languages are needed.
2. Assign the number of interpretation channels needed in the system: `Interpretation > Interpreter Channels` .
3. Select a language for each channel by choosing from the drop-down menu: `Interpretation > Language Setup` .
4. Assign the languages to the corresponding interpreter booths. By default, Booth 1 is assigned Channel 1, Booth 2 assigned Channel 2, etc. `Interpretation > Booth Setup` .

## Interpretation Settings

Interpreter Interrupt Ability	<p>The Interpreter Lock setting applies when multiple people are interpreting the same language. By default, interpreters alternate with each other and cannot override a unit already in use.</p> <p><b>Note:</b> The primary (A) language corresponds to the booth language. Interpreters select their B and C languages from the MXCIC.</p> <p>Change the setting from <code>Interpretation &gt; Interpreter Lock</code> .</p> <ul style="list-style-type: none"> <li>• <b>Complete Lock (default):</b> When a channel is in use, another interpreter cannot turn on their microphone</li> <li>• <b>No Lock:</b> Interpreters can turn on their microphone at any time, overriding the present interpreter. This applies to any interpreter with any setting</li> <li>• <b>A Interrupt (B or C):</b> Booth interpreters can override only those with the specified setting</li> <li>• <b>A Interrupt A:</b> Interpreters can override those with the same setting.</li> <li>• <b>A Interrupt A + B + C:</b> Interpreters can override those with the same or lower setting.</li> </ul>
Unassigned Channels	<p>By default, unassigned interpretation channels automatically have the floor mix. To change the setting, go to <code>Interpretation &gt; Auto Floor</code> .</p> <ul style="list-style-type: none"> <li>• <b>On:</b> floor mix is sent to unassigned interpretation channels</li> <li>• <b>Off:</b> no audio is provided on unassigned interpretation channels</li> </ul>
Display Type	<p>Choose the way the interpretation channel is displayed on the conference unit: <code>Interpretation &gt; Interpreter Channels</code></p> <ul style="list-style-type: none"> <li>• Channel Number</li> <li>• Language Abbreviation (first three letters of the language name in English)</li> </ul>

## Command Strings for External Controller

Set up a TCP/IP connection to control and monitor the MXC system from an external interface. Controllers such as AMX<sup>®</sup> or Crestron<sup>®</sup> connect to the DIS-CCU using a simple (raw) TCP/IP socket connection and the strings listed in this section. Use computers, room control systems, or micro controller based applications for button mimics and camera control applications.

Some examples of functionally available using the protocol:

- Setting a microphone in speak or in request
- Retrieving a list of seats available in the system.

This interface supports applications developed by customers, so the protocol is deliberately kept simple. The External Control protocol offers a means for supplementing the control functionality available through the DIS-CCU browser interface and the DIS-CCU interactive display, however some commands and settings available in the browser interface and on the DIS-CCU interactive display are not available using the 'External Control Protocol'

## General Protocol Behavior

### TCP/IP socket connection

A TCP/IP socket connection to the DIS-CCU must be established for the External Control protocol to become available. Configuration of the DIS-CCU connection to the Ethernet must be defined from the CCU interactive front plate control/Browser interface and an IP address for the DIS-CCU must be assigned in the network.

Choose either a static IP address or an IP address assigned through DHCP. It is convenient to ensure, that the DIS-CCU ends up with the same IP address at each start up.

Knowing the IP address, the only additional information required for setting up a TCP/IP connection is the Port Number:

**Port Number = 3142**

**Example:** Test connection to CCU via Putty®: If the DIS-CCU is assigned IP address 192.168.1.100, the external application must connect the TCP/IP socket to the address 192.168.1.100:3142.

Knowing the IP address of the DIS-CCU a connection can be set up using a simple terminal program like Putty.

1. Download at <http://www.putty.org> (<http://www.putty.org>)
2. Start Putty.
3. Insert IP address and Port Number.
4. Select 'Raw' for the Connection Type.
5. Press 'Open' to establish connection to the CCU. Control is now possible.
6. Type 'help' to see a list of commands available.

### Command Structure (from External Control to DIS-CCU)

To control the CCU an External Control sends commands to DIS-CCU included in command lines. Commands lines are build up in a very simple manner:

```
<command><SP><data><CR>
<command><SP><data><LF>
```

<SP> Space - 0x20 = 32

<CR> Carriage return - 0x0D = 13

<LF> Line Feed - 0x0A = 10

Command lines are terminated by a Carriage Return <CR> or Line Feed <LF> or both. In order to be able to communicate with Windows systems, Linux systems or other systems, the CCU understands both types of command line terminations.

Notice also, there is a space between the command and data. If a command does not carry any data, space is possible but not required.

The CCU is not sensitive to upper/lower case.

#### Example:

```
mic_on 212<CR>
```

Turn on microphone at seat 212. Command = mic\_on, data = 212. The 'mic\_on' command carries a seat number as data.

## Command Structure (from DIS-CCU to External Control)

Command lines out of the DIS-CCU are just as simple:

```
<command><SP><data><CR><LF>
```

```
<SP> Space - 0x20 = 32
```

```
<CR> Carriage return - 0x0D = 13
```

```
<LF> Line Feed - 0x0A = 10
```

Again, to satisfy most systems, the CCU terminates command lines by including both <CR> and <LF>.

## Seat Numbering

Microphone units are identified by means of a seat numbers. Each unit is assigned a seat number. This is done automatically for all conference units, when they are connected to the DIS-CCU. The DIS-CCU Browser interface is used to change seat numbering.

Seat numbers must be in the range from 1 to 65535.

## DIS-CCU Reply to Commands

Generally, a command from an external application is replied to by the CCU. But, reply to a command is produced only if actions are taken by the CCU due to the command.

**Example:** When a 'mic\_on' command results in a microphone being turned on, the CCU replies with a 'mic\_on' command. On the other hand, if a 'mic\_on' command does not lead to turning on a microphone, the CCU does not produce any reply.

There can be several reasons for the CCU to reject turning on a microphone:

- The microphone is already on
- The microphone is no longer connected to the system
- Speak list is already full ('max\_speakers') and delegate interrupt is not 'on'

## Retrieving System Status

The CCU supports streaming of status. When an External Control issues a 'mic\_status' or 'audio\_status' command, the CCU responds by sending the microphone system status. The same applies to 'audio status'. Therefore, it is possible for an External Control to synchronize with the CCU status.

## Voting Control

The external control interface features control of voting sessions and attendance check sessions in the Central Unit. And only if the feature license 'Voting' is uploaded in the DIS-CCU.

### Voting configurations

Two different configurations must be considered:

- DIS-CCU controlled by SW6000
- DIS-CCU not controlled by SW6000 (standalone)



## Retrieve voting sessions

No matter which configuration applies, it is possible for an external controller to request a list of voting sessions - using the command 'voting\_status'. The CCU will reply by returning the list of voting sessions currently applicable (either SW6000 defined voting sessions or build-in voting sessions).

### SW6000 controlled

SW6000 supports a number of voting sessions. Via the external control protocol, it is possible to make two requests:

- Start one of the SW6000 defined voting sessions
- Start SW6000 default voting session

### Standalone The CCU features

4 build-in voting sessions in standalone mode:

- 3-button voting
- 3-button secret voting
- 5-button voting
- 5-button secret voting

## Voting Results

During voting sessions the CCU delivers interim voting results, unless the session is secret.

At completion of a voting session, the CCU delivers final voting results. Also at completion of an attendance check the CCU delivers final attendance check result.

The DIS-CCU supports 3- and 5-button voting. 3-button voting sessions the following alternatives apply: 1 'Yes' 2 'Abstain' 3 'No' 5-button voting sessions the following alternatives apply: 1 '+' 2 '+' 3 '0' 4 '-' 5 '-' -' 10.1.9.2.1 Example: Voting Assume, that the DIS-CCU is not controlled by SW6000

### SW6000 controlled

With SW6000 attached to the CCU, voting results are defined in SW6000. Up to 9 voting results can be defined.

### Standalone

The DIS-CCU supports 3- and 5-button voting.

3-button voting sessions the following alternatives apply:

1. 'Yes'
2. 'Abstain'
3. 'No'

5-button voting sessions the following alternatives apply:

1. '++'
2. '+'
3. '0'
4. '-'

## 5. '--'

## Example: Voting

Assume that the DIS-CCU is not controlled by the SW6000

```
ExtCtrl
```

```
CU
----->
voting_status
----->
<-----
voting_configuration 1 3-button voting voting_configuration 2 3-button secret voting
voting_configuration 3 5-button voting voting_configuration 4 5-button secret voting
voting_status_done
<-----
----->
start_voting 1
----->
<----- voting_started 1
<-----
<----- interim_voting_result 1 0 Yes
interim_voting_result 2 0 Abstain
interim_voting_result 3 0 No
<-----
<-----
vote (Yes)
<-----
<----- interim_voting_result 1 1 Yes
interim_voting_result 2 0 Abstain
interim_voting_result 3 0 No
<-----
----->
stop_voting
----->
<-----
voting_stopped
<-----
<----- final_voting_result 1 1 Yes final_voting_result
2 0 Abstain
final_voting_result 3 0 No
<-----
```

## Microphone Control

### Commands from External Control to DIS-CCU

Turn on microphone

```
mic_on <seat no><CR>
```

Instruct the CCU to turn on the microphone at seat\_no.

If the CCU turns on the microphone, it replies with the '**mic\_on**' command. If the microphone also appeared in the request list, it is taken out of the request list and the CCU issues the '**mic\_request\_off**' command.

Turn off microphone

```
mic_off <seat no><CR>
```

Instruct the CCU to turn off the microphone at seat\_no.

If the CCU turns off the microphone, it issues a '**mic\_off**' command.

Turn off all the delegate microphones

```
mic_all_delegates_off><CR>
```

Instruct the CCU to turn off all delegate microphones.

A Chairman is not turned off.

The CCU responds to the command by issuing the '**mic\_off**' command for each microphone that is turned off.

Put a microphone in the reply list

```
mic_reply_on <seat no><CR>
```

Insert a microphone into the reply list.

If the CCU inserts the unit into the reply list and it issues the '**mic\_reply\_on**' command.

Remove a microphone from the reply list

```
mic_reply_off <seat no><CR>
```

Remove a microphone from the reply list.

If the CCU removes the unit from the reply list and it issues the '**mic\_reply\_off**' command.

Clear the reply list

```
mic_all_requests_off><CR>
```

Clear the reply list.

The CCU responds by issuing the '**mic\_reply\_off**' command for each microphone that is removed from the reply list.

Put a microphone in the request list

```
mic_request_on <seat no><CR>
```

Insert a microphone into the request list.

If the CCU inserts the unit into the request list and it issues the '**mic\_request\_on**' command.

Remove a microphone from the request list

```
mic_request_off <seat no><CR>
```

Remove a microphone from the request list.

If the CCU removes the unit from the request list and it issues the '**mic\_request\_off**' command.

Clear the request list

```
mic_all_requests_off><CR>
```

Clear the request list.

The CCU responds by issuing the '**mic\_request\_off**' command for each microphone that is removed from the request list.

Set the next microphone on

```
mic_next_on><CR>
```

Turns off the first microphone in the speak list and turns on the first microphone from the request list.

If a microphone is turned off, the CCU issues the '**mic\_off**' command.

If a microphone is turned on, the CCU issues the '**mic\_on**' command and the '**mic\_request\_off**' command.

Set the maximum number of total speakers

```
max_total_speakers <max total speakers><CR>
```

Maximum number of speakers allowed to speak.

**<max total speakers>** Can be set from "1" to "8"

The CCU issues the '**max\_total\_speakers**' command.

Set the maximum number of delegate speakers

```
max_speakers <max speakers><CR>
```

Maximum number of delegates allowed to speak.

**<max speakers>** Can be set from "1" to "8"

The CCU issues the '**max\_speakers**' command.

Set the maximum number of replies

```
max_replies <max replies><CR>
```

Maximum number of delegates allowed in the reply list.

**<max replies>** Can be set from "0" to "250".

The CCU issues the '**max\_replies**' command.

Set the maximum number of requests

```
max_requests <max requests><CR>
```

Maximum number of delegates allowed in the request list.

**<max requests>** Can be set from "0" to "250".

The CCU issues the '**max\_requests**' command.

Set the Operation Mode

```
mic_mode <mode><CR>
```

Set the system operation mode.

**<mode>** Can be set to "auto" (Automatic), "fifo" (First-in-first-out), "manual" (Manual) or "vox" (Voice Active)

**<mode>** Can be set to "auto" (Automatic), "fifo" (First-in-first-out), "manual" (Manual), "vox" (Voice Active), "auto+reply" (Automatic+Reply), "manual+reply" (Manual+Reply) and "vox+reply" (Voice Activate + Reply)

The CCU issues the '**mic\_mode**' command.

Set the Interrupt Mode

```
mic_interrupt <mode><CR>
```

Set the ability to interrupt. Defines, whether microphones should interrupt or not.

**<mode>** Can be "Same", "Lower" (microphones interrupt) or "off" (microphones do not interrupt)

The CCU issues the '**mic\_interrupt**' command

Set the microphone priority

```
mic_priority <seat_number>priority><CR>
```

Set the microphone priority.

**<seat\_number>**: microphone to adjust.

**<priority>**: desired priority. Possible values: 0 to 5, where 0 is the lowest priority and 5 is the highest priority.

The CCU responds to this command by returning a **mic\_priority** message.

Retrieve the Microphone Status

```
mic_status<CR>
```

Ask the CCU to deliver status of the system (microphones in speak, and microphones in request list).

The CCU issues the microphone system status. The status is a list of commands from the CCU:

seat\_state (for all units in the system)

mic\_priority (for all units in the system)

mic\_mode

mic\_interrupt

max\_total\_speakers

max\_speakers

max\_requests

max\_replies

mic\_on (for all units in speakers list)

mic\_request\_on (for all units in request list)

mic\_reply\_on (for all units in reply list)

mic\_status\_done

Retrieve the reply Status

reply\_status<CR>

Ask the CCU to deliver status of the reply configuration.

The CCU responds by sending reply system status. The status is a list of commands from the CCU:

reply\_status

reply\_configuration

reply\_status\_done

Help

help<CR>

**help <command><CR>**

Help is available for all commands supported by the CCU. If a command is included after the help command, details on that command is issued by the CCU.

The help command results in a brief description of the command being issued by the CCU. This command is intended for use on a simple console.

## Commands from DIS-CCU to External Control

Microphone On

mic\_on <seat no><CR>

A microphone is turned on.

Microphone Off

mic\_off <seat no><CR>

A microphone is turned off.

Microphone into Reply List

mic\_reply\_on <seat no> <reply position><reply #><name><CR>

A microphone is inserted into the reply list.

<seat no>: the seat number

<reply position>: the position in the reply list

<reply #>: the reply number in the reply configuration

<name>: the seat name or delegate name

- The seat name is name that can be edited by the web interface when the CCU is standalone.
- The delegate name is the name of the person logged in at this seat when SW6000 is connected.

Microphone out of reply list

mic\_reply\_off <seat no><CR>

A microphone is removed from reply list.

Microphone into Request List

mic\_request\_on <seat no> <request position><name><CR>

A microphone is inserted into the request list.

<seat no>: the seat number

<request position>: provides information about the position in the request list.

<name>: the seat name or delegate name

Microphone out of Request List

mic\_request\_off <seat no><CR>

A microphone is removed from request list.

Max Total Speakers

max\_total\_speakers <max total speakers><CR>

Maximum number of speakers allowed to speak.

**<max total speakers>** "1" to "8"

Max Delegate Speakers

max\_speakers <max speakers><CR>

Maximum number of delegates allowed to speak.

**<max speakers>** "1" to "8"

Max Replies

max\_replies <max replies><CR>

Maximum number of delegates allowed in the reply list.

**<max replies>** "0" to "250".

Max Requests

max\_requests <max requests><CR>

Maximum number of delegates allowed in the request list.

**<max requests>** "0" to "250".

Operation Mode

mic\_mode <mode><CR>

Provides system operation mode.

**<mode>** "auto" (Automatic), "fifo" (First-in-first-out), "manual" (Manual), "vox" (Voice Active), "auto+reply" (Automatic+Reply), "manual+reply" (Manual+Reply) and "vox+reply" (Voice Active + Reply)

## Interrupt Mode

```
mic_interrupt <mode><CR>
```

Ability for microphones to interrupt.

**<mode>** "Same" (microphones interrupt other microphones with same or lower priority), "Lower"(microphones interrupt other microphones with lower priority) and "off" (microphones do not interrupt other microphones)

## Mic priority

```
mic_priority <seat_number><priority><CR>
```

This message indicates the priority of a microphone.

**<seat\_number>**: the selected microphone

**<priority>**: The priority. Possible values: 0 to 5, where 0 is the lowest priority and 5 is the highest priority

## Seat State

```
seat_state <seat number> <seat state> <seat name><CR>
```

Provides seat information.

This information is sent from the CCU to an external control application in the following situations:

- When a participant logs in or out
- When the seat name is modified
- When the external control application requests microphone status (mic\_status)
- When a microphone unit becomes lost or found

**<seat number>** The seat number identification of a microphone unit. An number from 1 to 65535.

**<seat state>** The current state of the seat. This is either "active" or "passive"

**<seat name>** The seat name or delegate name. If a delegate name is available for the seat number then the delegate name is provided. Otherwise the seat name is provided.

**Example:**

```
seat_state 12 active John Jones
```

This command informs about seat number 12, which is active and has the name 'John Jones' attached.

## Microphone Status Complete

```
mic_status_done<CR>
```

Provides notification that complete system status has been sent.

## Command error

```
command_error <error text><CR>
```

The CCU has received an unknown command.

**<error text>** is a text explaining the error.

**Examples:**

```
command_error unknown command<CR>
```



command\_error syntax error<CR>

## Audio Control

### Commands from External Control to DIS-CCU

#### Set Loudspeaker Volume

loudspeaker\_volume <volume><CR>

Sets the volume of the loudspeakers for all microphone units.

<volume> The volume of the loudspeakers ranges from -41 to 0. The value -41 indicates the speaker is Off. Values from -40 to 0 indicates the attenuation in dB.

The CCU responds to this command by issuing the loudspeaker\_volume command.

#### Set Line Input 1 Level

line\_input\_level\_1 <level><CR>

Adjusts the level of the line input 1 signal.

<level> The level of line input 1 ranges from -41 to 0. The value -41 indicates the signal level is zero. Values from -40 to 0 indicate the attenuation in dB.

The CCU responds to this command by issuing the line\_input\_level\_1 command.

#### Set Line Input 1 gain

line\_input\_gain\_1 <gain><CR>

Adjusts the input gain of the line input 1.

<gain> 0 or 10.

Gain can be set to 0 dB or 10 dB. 0 dB will not add any gain to the line input whereas 10 dB will add 10 dB gain to the line input. The CCU responds to this command by a line\_input\_gain\_1 message.

#### Set Line Input 2 Level

line\_input\_level\_2 <level><CR>

Adjusts the level of the line input 2 signal.

<level> The level of line input 2 ranges from -41 to 0. The value -41 indicates the signal level is zero. Values from -40 to 0 indicate the attenuation in dB.

The CCU responds to this command by issuing the line\_input\_level\_2 command.

#### Set Line Input 2 gain

line\_input\_gain\_2 <gain><CR>

Adjusts the input gain of the line input 2 .

<gain> 0 or 10.

Gain can be set to 0 dB or 10 dB. 0 dB will not add any gain to the line input whereas 10 dB will add 10 dB gain to the line input. The CCU responds to this command by a line\_input\_gain\_2 message.

## Set Line Output Volume (A-H)

```
line_output_volume <output> <volume><CR>
```

Adjusts the level of the line output signal.

<output> Indicates which output is being controlled. Possible values are: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H'.

<volume> The volume of the line output ranges from -41 to 0. The value -41 indicates the volume is Off. Values from -40 to 0 indicate attenuation in dB.

The CCU responds to this command by issuing the line\_output\_volume command.

## Define Audio Path

```
audio_path <path> <on/off><CR>
```

This command defines audio connections in the system.

<path> Indicates which connection is being controlled. Possible values are: 'mic\_to\_speaker', 'mic\_to\_floor', 'linein\_1\_to\_speaker', 'linein\_1\_to\_lineout\_A' or 'linein\_1\_to\_floor'.

<on/off> Indicates whether the audio is being routed from microphones/lineinput\_1 to speakers/lineoutput/floor.

The CCU responds to this command by issuing the audio\_path command.

## Set Individual Speaker Attenuation

```
mic_speaker_attenuation <seat_number><attenuation><CR>
```

This command sets the speaker attenuation of a microphone.

**<seat\_number>**: The desired microphone

**<Attenuation>**: The desired speaker attenuation. Possible values: 0 to 7. (0 to 6 will attenuate 0 to 6 dB. 7 is speaker off.)

The CCU responds to this command by returning a 'mic\_speaker\_attenuation' message.

## Set Individual Microphone Attenuation

```
mic_attenuation <seat_number><attenuation><CR>
```

This command sets the attenuation of a microphone.

**<seat\_number>**: The desired microphone

**<Attenuation>**: The desired microphone attenuation. Possible values: 0 to 6. (0 is the lowest attenuation and 6 is most attenuation.)

The CCU responds to this command by returning a 'mic\_attenuation' message.

## Request Audio Status

```
audio_status<CR>
```

Provides system audio status.

The CCU responds to this command by issuing a list of commands for the Audio settings:

line\_output\_volume (for all outputs A-D)

audio\_path (for all paths)

line\_input\_level (for all inputs)

line\_input\_gain (for all inputs)

mic\_speaker\_attenuation (for all units)

mic\_attenuation (for all units)

loudspeaker\_volume

audio\_status\_done

## Commands from DIS-CCU to External Control

### Loudspeaker Volume

loudspeaker\_volume <volume><CR>

Indicates the volume of loudspeakers for all microphone units.

<volume> The volume of the loudspeakers ranges from -41 to 0. The value -41 indicates the volume is Off. Values from -40 to 0 indicate attenuation in dB.

### Line Input 1 Level

line\_input\_level\_1 <level><CR>

Indicates the level of the line input 1 signal.

<level> The level of line input 1 ranges from -41 to 0. The value -41 indicates the level is zero. Values from -40 to 0 indicate attenuation in dB.

### Line Input 2 Level

line\_input\_level\_2 <level><CR>

Indicates the level of the line input 2 signal.

<level> The level of line input 2 ranges from -41 to 0. The value -41 indicates the level is zero. Values from -40 to 0 indicate attenuation in dB.

### Line Input 1 Gain

line\_input\_gain\_1 <level><CR>

Indicates the input gain of the line in 1 input.

<gain>: 0 or 10.

Gain can be set to 0 dB or 10 dB. 0 dB will not add any gain to the line input whereas 10 dB will add 10 dB gain to the line input.

### Line Input 2 Gain

line\_input\_gain\_2 <level><CR>

Indicates the input gain of the line in 2 input.

<gain>: 0 or 10.

Gain can be set to 0 dB or 10 dB. 0 dB will not add any gain to the line input whereas 10 dB will add 10 dB gain to the line input.

## Line Output Level (A-D)

```
line_output_level <output> <level><CR>
```

Adjusts the level of the line output signal.

<output> Indicates which output is being controlled. Possible values: 'A', 'B', 'C', 'D', 'E', 'F', 'G', 'H'. On DIS-CCU 'A' to 'D' are possible. DIS-CCU may deliver 'A' to 'H'.

<level> The level of the line output ranges from -41 to 0. The value -41 indicates the output is zero. Values from -40 to 0 indicate attenuation in dB.

## Define Audio Path

```
audio_path <path> <on/off><CR>
```

This command defines audio connections in the system.

<path> Indicates which connection is being controlled. Possible values are: 'mic\_to\_speaker', 'mic\_to\_floor', 'linein\_1\_to\_speaker', 'linein\_1\_to\_lineout\_A' or 'linein\_1\_to\_floor'.

<on/off> Indicates whether the audio is being routed from microphones/lineinput\_1 to speakers/lineoutput\_A/floor.

## Individual Speaker Attenuation

```
mic_speaker_attenuation <seat_number><attenuation><CR>
```

Indicates the speaker attenuation of a microphone.

**<seat\_number>**: The desired microphone

**<Attenuation>**: The desired speaker attenuation. Possible values: 0 to 7. (0 to 6 will attenuate 0 to 6 dB. 7 is speaker off.)

## Individual Microphone Attenuation

```
mic_attenuation <seat_number><attenuation><CR>
```

Indicates the attenuation of a microphone.

**<seat\_number>**: The desired microphone

**<Attenuation>**: The desired attenuation. 0 to 6 dB, where 0 is the lowest attenuation and 6 is most attenuation.

## Audio Status Complete

```
audio_status_done<CR>
```

This command terminates audio status streaming.

## Voting Commands

### Commands from External Control to the DIS-CCU

Start a voting session

```
start_voting <voting_session_id><CR>
```

Starts a voting session in the CCU

**<voting\_session\_id>**: Identification of the voting configuration to start.

The CCU replies with 'voting\_started', if a voting session is started.

SW6000 controlled

The voting\_session\_id defines which voting configuration to run. A list of configurations can be requested by command 'voting\_status'.

If no voting\_session\_id is specified, the 'default SW6000 voting configuration' is requested.

Standalone

voting\_session\_id defines the build-in voting configurations:

'1' 3-button voting

'2' 3-button secret voting

'3' 5-button voting

'4' 5-button secret voting

If no voting\_session\_id is specified, the configuration '1' is requested.

Stop a voting session

stop\_voting<CR>

Used to stop an ongoing voting session in the CCU. If the voting session is stopped, the CCU replies with voting\_stopped.

Cancel a voting session

cancel\_voting<CR>

Used to cancel an ongoing voting session in the CCU. If the voting session is cancelled, the CCU replies with voting\_cancelled.

Start attendance check session

start\_attendance\_check<CR>

Used to start an attendance check session in the CCU. If an attendance check session is started, the CCU replies with attendance\_check\_started.

Stop an attendance check session

stop\_attendance\_check<CR>

This command is used to stop an ongoing attendance check session in the CCU. If the attendance check session is stopped, the CCU replies with attendance\_check\_stopped.

Cancel an Attendance Check

cancel\_attendance\_check<CR>

Used to cancel an ongoing attendance check session in the CCU. If the attendance check session is cancelled, the CCU replies with attendance\_check\_cancelled.

Request Voting Status

voting\_status<CR>

Used to request voting status. The result is a list of available voting configurations. The CCU replies to this command by returning the commands:

```
voting_configuration 1 <configuration_label>
...
voting_configuration <n> <configuration_label>
voting_status_done
```

## Commands from DIS-CCU to External Control

A voting session is started

```
voting_started<CR>
```

A voting session is stopped

```
voting_stopped<CR>
```

A voting session is cancelled

```
voting_cancelled<CR>
```

Interim voting results

```
interim_voting_result<result_id><interim_result><result_text><CR>
```

During a voting session the CCU informs about interim voting results. When new votes are cast, the CCU distributes interim voting results. This command informs about one of the interim voting results.

<result\_id> With SW6000 connected values [1 to 9] corresponding to the 9 result columns in the SW6000 'Voting Configurations'. For a standalone DIS-CCU this is the button numbers [1 to 5].

<interim\_result> interim voting result. With SW6000 this is the result for the 9 result columns. For a standalone CCU this is the number of votes given on the specified button.

<result\_text> Text related to the result. With SW6000 this is the labels for the 9 result columns. For a standalone CCU this voting button labels.

Final voting results

```
final_voting_result<result_id><final_result><result_text><CR>
```

At completion of a voting session the CCU distributes final voting results. This command informs about final voting result for one of the voting alternatives.

<result\_id> With SW6000 connected values [1 to 9] corresponding to the 9 result columns in the SW6000 'Voting Configurations'. For a standalone DIS-CCU this is the button numbers [1 to 5].

<final\_result> With SW6000 this is the result for the 9 result columns. For a standalone CCU 61cc this is the number of votes given on the specified button.

<result\_text> Text related to the result.

An attendance check session is started

```
attendance_check_started<CR>
```

An attendance check session is stopped

```
attendance_check_stopped<CR>
```

An attendance check session is cancelled

attendance\_check\_cancelled<CR>

Interim Attendance check result

interim\_attendance\_check\_result<interim\_result><CR>

Used by the CCU to inform about the interim attendance check result.<interim\_result> contains the interim attendance check result.

Final Attendance check result

final\_attendance\_check\_result<final\_result><CR>

Used by the CCU to inform about the final attendance check result.

<final\_result> contains the interim attendance check result. For a standalone system it indicates how many delegates have pressed the 'attendance' button.

Voting Configuration

voting\_configuration<voting\_configuration\_id><voting\_configuration\_name><CR>

Identifies a voting configuration.

<voting\_configuration\_id> is an integer identifying the voting configuration.

<voting\_configuration\_name> is a name for the configuration.

Voting Status complete

voting\_status\_done<CR>

Informs that voting status streaming is complete.

## Troubleshooting

**Attention:** Always use shielded Cat 5e (or higher) network cables for reliable system operation. Ensure the right cables are used and installed correctly before referencing the troubleshooting table.

<p>The light rings on the microphone are constantly flashing after the system is powered on.</p>	<ul style="list-style-type: none"> <li>• Check that cables are shielded Cat 5e (or higher)</li> <li>• Ensure that all the connectors on all the cables are firmly inserted in the sockets on the units</li> <li>• Check that the feed cables from the microphone units are properly inserted into the 'DCS-LAN' socket on the DIS-CCU.</li> </ul>
<p>The 'Del. Off' button on the Chairman Unit does not switch off the Delegate Units</p>	<ul style="list-style-type: none"> <li>• Check to make sure the unit is configured as a Chairman Unit</li> <li>• Check to make sure the other units are not configured as Chairman or Interpreter Units. (See the Program the User Type section.)</li> </ul>

<p>The audio from an Interpreter Unit cannot be heard in the headphone of Delegate or Chairman Units</p>	<ul style="list-style-type: none"> <li>• Check the headphone volume control on the units</li> <li>• Check the channel selection on the microphone units</li> <li>• Check that the headphone plug is firmly inserted in the headphone jack</li> <li>• Check that the light ring on the microphone on the Interpreter Unit is illuminated and that the gooseneck microphone is firmly inserted in the socket</li> </ul>
<p>There is no audio coming from the built-in loudspeakers</p>	<ul style="list-style-type: none"> <li>• Check the 'Loudspeaker Volume' setting using either the interactive menu on the CCU or using the browser control.</li> <li>• Check that the loudspeaker is set to sufficient volume. (DIS-CCU browser &gt; Audio &gt; Loudspeaker Control.)</li> <li>• Check that the floor mix is assigned to loudspeaker (DIS-CCU browser &gt; Audio &gt; Input Control &gt; Loudspeaker)</li> <li>• Check that the seats are selected in 'Group A' (DIS-CCU browser &gt; Audio &gt; Group Setup). 'Group A' is always used as the source for the floor mix. If a unit is not selected in 'Group A', the audio from the unit will not be heard in the built-in loudspeakers.</li> </ul>
<p>A microphone cannot be turned 'On'</p>	<ul style="list-style-type: none"> <li>• Check the cables. All cabling for DIS equipment must be Cat 5e or higher with shielded RJ45 cables.</li> <li>• Check the settings Max. Delegate Speaker and Max. Total - Speakers to make sure there is room for another microphone to turn on.</li> <li>• Check the Operation Mode to make sure the mode allows participants to turn on their own microphones.</li> </ul>
<p>The DIS-CCU browser application will not open on a PC</p>	<ul style="list-style-type: none"> <li>• Using the interactive menu on the CCU, check the IP address: LAN setup &gt; Acquire IP address . Use this IP address using the browser</li> <li>• Verify that the CCU and the PC are connected to the same network</li> <li>• Check the LAN cable connections</li> </ul>
<p>The DIS-CCU browser application will not open on a tablet or laptop</p>	<ul style="list-style-type: none"> <li>• Using the interactive menu on the CCU, check the IP address: LAN setup &gt; Acquire IP address . Use this IP address using the browser</li> <li>• Verify that the tablet or laptop is connected to the proper wireless access point</li> <li>• Check that the DIS-CCU is connected to the same subnet as the wireless access point</li> </ul>



## Firmware Update

Use the Firmware Update Utility (FUU) to update the system firmware.

1. Make sure the system is on and operating properly.
2. Download the latest firmware from the Shure website. The FUU is bundled with the firmware download.
3. Install the application and save the firmware folder to the computer.
4. Launch the application.
5. Select the proper firmware library for the equipment.
  1. Close the missing dialog box
  2. Navigate to the FUU library (FUU\_upgrade\_library)
  3. Select the open button to use this folder.
6. Assign the connection method for the computer and equipment and select the OK button to exit the setup window:
  - **Ethernet:** Type the IP address of the CCU and use IP port 3142.
7. Information about the CCU and all connected units display in the main window.
8. Select the desired firmware release (typically the highest/latest) in the Selected Release Id drop-down list.
9. Select the Upgrade System button to begin the firmware update process. A status window will appear and show the progress of the firmware upgrade.

## Factory Default Reset

From the Hardware	<p>This will revert the unit to factory settings, erasing all participant, system <b>and IP settings</b>. The unit will reboot in 5900 mode.</p> <ol style="list-style-type: none"> <li>1. Go to the front panel of the CCU.</li> <li>2. Scroll the main menu to Restore factory def.. Press the center button to enter menu.</li> <li>3. Press the center button to select OK and confirm the reset.</li> <li>4. Wait for the system to reboot. The computer will lose connection to the browser interface during this time.</li> </ol>
From the Browser Interface	<p>This will erase all participant and system settings.</p> <ol style="list-style-type: none"> <li>1. Open the CCU browser interface</li> <li>2. Go to System &gt; Factory Defaults</li> <li>3. Select the Reset button to reset the system.</li> <li>4. Wait for the system to reboot. The computer will lose connection to the browser interface during this time.</li> </ol>

## Diagnostic Report

To assist in troubleshooting, a system-wide report is available from the moment the CCU powers on.

1. Go to Diagnostics > Report
2. Select Generate to view the report in a new window.
3. Save the file as an HTML document and mail it to the Shure support group to diagnose the issue.

```

-----
rootfs:b6809 z17390 km0 - 6809 n
FFGA: 00000003/0005005d
-----
({'contents':
Central Unit Version
Hardware ID   : DIS-CCU
BoardInfo    : 0x9103
Serial Number : 004.246.188
LAN MAC Address: e1:67:ba:00:20:ea
Firmware Version: 0.26.153
Rootfs version: b6809 z17390 km0'}};
-----
({'contents':
Addr.  Serial nbr.  Type                State
1      002.005.006 A 'DCS9xx DM'         '- - - V -'  'Active(active)'
2      002.005.191 A 'DCS9xx DM'         '- - - V -'  'Active(active)'
3      002.005.050 A 'DCS9xx DM'         '- - - V -'  'Active(active)'
4      004.110.078 A 'DCS9xx DM'         '- - - V C'  'Active(active)'
5      002.111.097 A 'DCS9xx DM'         '- - - V -'  'Active(active)'
6      004.107.231 A 'DCS9xx DM'         '- - - V C'  'Active(active)'
7      004.045.203 A 'DCS9xx DM'         '- - - V C'  'Active(active)'
8      004.229.080 A 'DCS9xx DM'         '- - - V -'  'Active(active)'

Nbr of units (Active/Lost):
Chain A      0/0
Chain B      0/0
Chain C      0/0
Chain D      0/0
Total        8/0 = 8
Unreg units  0

Addr.  Ext.CU Id  MIC  IS  AO  Voting Chipcard Conference
4040  Ext.CU-000  No   No  No  No   No   No
4041  Ext.CU-000  No   No  No  No   No   No
-----
({'contents':
CU License Information

```

## Technical Specifications

### Microflex Complete System

The MXC system conforms to IEC 60914, the international standard for conference systems. However the functionality of an Interpreter Unit differs from the standard.

Audio performance specifications are measured from the audio input of a conference unit to the headphone output of a conference unit.

### Wiring Details

#### Main Power

Blue	Neutral
Brown	Live
Green/Yellow	Earth (Ground)

#### DCS-LAN Chain

The DIS-CCU uses Cat5e, Cat6 or Cat7 F/UTP or U/FTP cables with shielded RJ45 connectors.

EIA 568-B wiring must be used.

**Important:** The names of Cat5/6/7 cable type have changed.

Old Name	New Name
FTP	F/UTP

Old Name	New Name
STP	U/FTP
UTP	U/UTP

**Important:** Use only F/UTP or U/FTP (screened) cables and screened RJ45 connectors and not U/UTP cable, which is unshielded.

How to wire a Cat5e (EIA 568-B) cable to a RJ45 con.:

Pin	Function	Connector #1	Connector #2
1	In-going +	ORG/WHT	ORG/WHT
2	In-going -	ORG	ORG
3	+48V	GRN/WHT	GRN/WHT
4	0V	BLU	BLU
5	0V	BLU/WHT	BLU/WHT
6	+48V	GRN	GRN
7	Outgoing -	BRN/WHT	BRN/WHT
8	Outgoing +	BRN	BRN

If other color codes are used then the four pairs are connected as follows:

**Pair 2:** Pin 1 & 2

**Pair 3:** Pin 3 & 6

**Pair 1:** Pin 4 & 5

**Pair 4:** Pin 7 & 8

The phase of the pairs must be correct and the wiring specification EIA 568-B (Cat5e).

Cat6 and Cat7 cables are normally only terminated in sockets (female) and not in cable plugs.

Cat6 and Cat7 can only be used for feeding cables terminating in wall outlets or patch panels.

Analog Audio Out

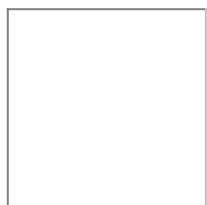
XLR3 male

Pin	Signal	Cable type
1	Earth	2 x 0.25 mm <sup>2</sup> shielded.
2	Signal +	
3	Signal –	

## Analog Audio In

XLR3 female

Pin	Signal	Cable type
1	Earth	2 x 0.25 mm <sup>2</sup> shielded.
2	Signal +	
3	Signal –	



## Emergency switch

Terminal block

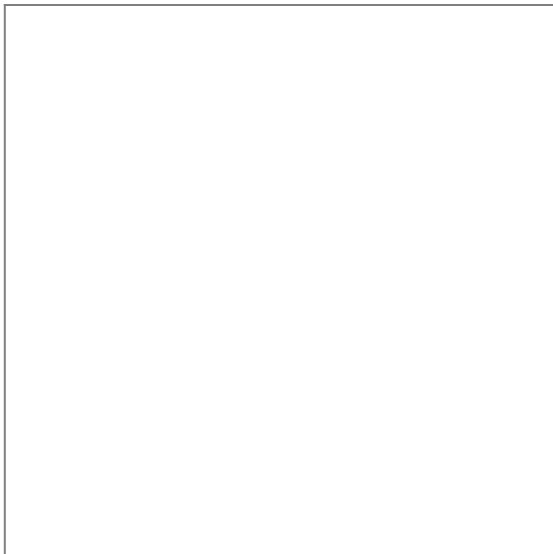
Connect the emergency switch to pin 1 and 2.



## Earphones

3.5 mm Jack plug

Pin	Connector	Function
1	Tip	Signal left
2	Ring	Signal Right
3	Sleeve	Electrical earth/screen



## Common System Specifications

### Latency

Microphone Input to Headphone Output	5.5ms
Microphone Input to Analog out	6.25ms
Analog in to Headphone Output	7.25ms

### Audio Frequency Response

Loudspeaker Output	200 Hz - 16 kHz (+0.5/-10 dB)
Headphone Output	110 Hz - 16 kHz (+0.5/-3 dB)

### THD+N

0.2%

### Digital Signal Processing

24-bit, 32 kHz

### Polarity

Positive pressure on diaphragm produces positive voltage on pin 2 with respect to pin 3 (DIS-CCU Output)

### Mean Time Between Failures

>400,000 hours

### Microphone Connector

10-pin gooseneck

**Pin Assignments**

Proprietary Shure Pinout

**Input Connector**

Unbalanced

**Output Connector**

dual mono (will drive stereo phones)

**Network Connections**

DCS-LAN

**Power Supply**

DCS-LAN (DIS-CCU, EX6010, PI6000)

**Voltage At Source**

20 to 48 V

**Cable Requirements**

Cat 5e or higher

**NFC Carrier Frequency**

13.56 MHz

**Antenna Type**

Internal NFC Loop

**NFC Card Compatibility**

ACOS3 dual interface and contactless

**Color**

Black

**Housing**

Molded Plastic, Aluminum

**Operating Temperature Range**

-6.7°C (20°F) - 40°C (104°F)

**Storage Temperature Range**

-29°C (-20°F) - 74°C (165°F)

**Relative Humidity**

95%

**Conference Unit Audio Specifications****Audio Input****Nominal Input Level**

-60 dBV

**Maximum Audio Input Level**

Microphone	-1.5 dBV at 1% THD
Headset	-5.5 dBV at 1% THD

**Audio Frequency Response**

20 Hz - 16 kHz (+0.5/-10 dB)

**THD+N**

Microphone Input	0.04%
Headset Input	0.07%

**Dynamic Range**

Microphone Input , Unweighted	110 dB
Microphone Input , A-Weighted	112 dB
Headset Input , Unweighted	92 dB
Headset Input , A-Weighted	94 dB

**Preamplifier Equivalent Input Noise (EIN)**

-115.8 dBV

**Input Impedance**

Microphone	26 k $\Omega$
Headset	2.2 k $\Omega$

**Audio Output****Nominal Output Level**

70 dB SPL at 0.5m

**Maximum Audio Output Level**

Loudspeaker Output	82 dB SPL-A at 0.5m
Headphone Output	1.7 dBV

**Audio Frequency Response**

Speaker Output	200 Hz - 16 kHz (+0.5/-10 dB)
Headphone Output	110 Hz - 16 kHz (+0.5/-3 dB)

**THD+N**

Loudspeaker Output	<1%
Headphone Output	<0.2%

**Dynamic Range**

Speaker Output , Unweighted	88 dB (MXCIC = 92 dB)
Speaker Output , A-Weighted	90 dB (MXCIC = 95 dB)
Headphone Output , Unweighted	91 dB (MXCIC = 91 dB)
Headphone Output , A-Weighted	93 dB (MXCIC = 93 dB)

**Load Impedance**>8  $\Omega$ **Conference Unit Specifications**

MXC615

**Dimensions**

75.3 x 154.9 x 170.7 mm (3.0 x 6.1 x 6.8 in.)H x W x D

**Weight**

770 g (27.2 oz.)



**Screen Type**

OLED

**Screen Size**

19.37 x 7.86 mm (0.76 x 0.31 in.)

**Display Resolution**

96 x 39 (125 PPI)

**Power Consumption**

Typical	1.8 W
Maximum	2.8 W

MXC620 / MXC620-F

**Dimensions**

MXC620	75.3 x 154.9 x 170.7 mm (3.0 x 6.1 x 6.8 in.) H x W x D
MXC620-F	90 x 235 x 72 mm (3.543 x 9.252 x 2.835 in.) H x W x D

**Weight**

MXC620	790 g (27.9 oz.)
MXC620-F	1160 g (40.9 oz.)

**Screen Type**

OLED

**Screen Size**

19.37 x 7.86 mm (0.76 x 0.31 in.)

**Display Resolution**

96 x 39 (125 PPI)

**Power Consumption**

MXC620 Typical Typical	1.9 W
MXC620 Maximum	3.8 W
MXC620-F Typical	1.9 W

MXC620-F Maximum	3.6 W
------------------	-------

## MXC630 / MXC630-F

### Dimensions

MXC630	74 x 268 x 153 mm (2.9 x 10.6 x 6.0 in.) H x W x D
MXC630-F	90 x 235 x 72 mm (3.5 x 9.3 x 2.8 in.) H x W x D

### Weight

MXC630	1020 g (36.0 oz.)
MXC630-F	1160 g (40.9 oz.)

### Screen Type

OLED

### Screen Size

19.37 x 7.86 mm (0.76 x 0.31 in.)

### Display Resolution

96 x 39 (125 PPI)

### Power Consumption

MXC630 Typical	1.9 W
MXC630 Maximum	4.1 W
MXC630-F Typical	1.9 W
MXC630-F Maximum	3.6 W

## MXC640

### Dimensions

74 x 268 x 153 mm (2.9 x 10.6 x 6.0 in.)

### Weight

1080 g (38.1 oz.)

### Screen Type

Color TFT LCD with Capacitive Touch Screen

**Screen Size**

109.2 mm (4.3 in.)

**Display Resolution**

480 x 272 (128 PPI)

**Power Consumption**

Typical	2.8 W
Maximum	4.8W

**MXCMIU****Dimensions**

MXCMIU	40 x 140 x 78 mm (1.6 x 5.5 x 3.1 in.) H x W x D
MXCMIU-FS	39 x 90 x 90 mm (1.5 x 3.5 x 3.5 in.) H x W x D
MXCMIU-FL	39 x 160 x 90 mm (1.5 x 6.3 x 3.5 in.) H x W x D

**Weight**

MXCMIU	400 g (14.1 oz.)
MXCMIU-FS	360 g (12.7 oz.)
MXCMIU-FL	670 g (23.6 oz.)

**Power Consumption**

MXCMIU Typical	1.8 W
MXCMIU Maximum	2.0 W
MXCMIU-FS Typical	0.1 W
MXCMIU-FS Maximum	0.6 W
MXCMIU-FL Typical	0.1 W
MXCMIU-FL Maximum	0.9 W

**MXCMIU Connection to MXCMIU-FS / MXCMIU-FL**

HDMI, x2

**Maximum Cable Length**

5m

**XLR Input****Maximum Input Level**

PAD OFF	-21.1 dBV
PAD ON	21.7 dBV

**Audio Frequency Response**

50 Hz - 14.3 kHz (+0.5/-3 dB)

**THD+N**

0.07%

**Dynamic Range**

PAD OFF , Unweighted	89.5 dB
PAD OFF , A-Weighted	91 dB
PAD ON , Unweighted	115 dB
PAD ON , A-Weighted	116 dB

**Input Impedance**17 k $\Omega$  at 1 kHz**Configuration**

Balanced

**Type**

3-pin XLR

**Pin Assignments**

1=ground, 2=audio +, 3=audio -

**GND Lift**

Left	GND Connected
Right	GND Disconnected

**MXCIC****Audio Output Type**

3.5mm female socket (x2, dual mono, TRRS) 6.35mm female socket (x1, stereo, TRS)

**Dimensions**

198 x 324 x 96 mm (7.8 x 12.8 x 3.8 in.) H x W x D

**Weight**

2250 g (79.4 oz.)

**Screen Type**

Color TFT Display

**Screen Size**

160 mm (6.3 in.)

**Display Resolution**

800 x 240 (134 PPI)

**Power Consumption**

Typical	5.5 W
Maximum	7.0W

**Number of Incoming Channels**

Up to 32 (31 + Floor)

**Number of Outgoing Channels**

3 (A/B)

**Maximum Units Per Booth**

32

**Maximum Number of Booths**

150

**Maximum Number of Units (total)**

128

# How To Order

## DIS-CCU

Central control unit for the DIS lines of discussion and conferencing systems. Operates with the DDS 5900 system as shipped, and is upgradeable for MXC and legacy DCS 6000 systems with a feature license. Includes a web interface for system configuration, microphone control, and displaying the speaker list during the meeting.

Include accessories:

- Terminal block for EEM connector
- 19" rack brackets
- USB memory stick with user manuals
- Tool for securing the gooseneck microphone

### DIS-CCU Variations

Central control unit, without power supply	DIS-CCU
Central control unit, with power supply for Europe	DIS-CCU-E
Central control unit, with power supply for UK	DIS-CCU-UK
Central control unit, with power supply for U.S.	DIS-CCU-US
Central control unit, with power supply for Argentina	DIS-CCU-AR
Central control unit, with power supply for Brazil	DIS-CCU-BR

### DIS-CCU Feature Licenses

DIS-CCU feature license for operation with the DCS6000 System	FL6000
DIS-CCU feature license for additional participants in the DCS6000 System (up to 3,800 seats)	FL6000-3800
DIS-CCU feature license for additional interpretation channels in the DCS6000 System (up to 8 channels)	FL6000-INT-8
DIS-CCU feature license for additional interpretation channels in the DCS6000 System (up to 16 channels)	FL6000-INT-16
DIS-CCU feature license for additional interpretation channels in the DCS6000 System (up to 31 channels)	FL6000-INT-31

## PS-CCU Power Supply

Power supply for the DIS-CCU and DCS-LAN power kits and inserters.

## PS-CCU Model Variations

Model	Region
PS-CCU-US	US
PS-CCU-AR	Argentina
PS-CCU-AZ	Australia
PS-CCU-BR	Brazil
PS-CCU-CHN	China
PS-CCU-E	Europe
PS-CCU-IN	India
PS-CCU-J	Japan
PS-CCU-K	Korea
PS-CCU-TW	Taiwan
PS-CCU-UK	UK

## Pre-Tested Shure Cables

Shure offers individually-tested cables for Shure conferencing and discussion equipment. The EC 6001 are high-quality, shielded Cat5e cables available various lengths from 0.5 m to 100 m. Made with male-to-male shielded connectors.

### Male-to-Male Patch Cables

0.5 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-0.5
1 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-01
2 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-02
3 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-03
5 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-05
10 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-10
20 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-20

30 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-30
50 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-50
100 m black shielded Cat5e F/UTP cable (shielded RJ45)	EC 6001-100

## Advanced Setup

Distribution box with 4 outputs. DCS6000 and DDS 5900 systems	JB 6104
DCS-LAN extension unit for additional 160 conference units	EX 6010
Inline data repeater for DCS-LAN network; 1 input x 4 outputs	RP 6004
Inline power supply for up to 40 additional discussion units. See table for regional variations.	PI-6001

### Inline Power Supply Kit

Model	Region
PI-6001	No power supply
PI-6000-US	US
PI-6000-AR	Argentina
PI-6000-BR	Brazil
PI-6000-E	Europe
PI-6000-UK	UK

## Accessories

Redundancy Interface Box for DCS-LAN	MXC-ACC-RIB
DUAL-CARD FOR MXC/MXCW/DCS, QTY 10	MXCDualCard-10pk
CHAIRMAN BUTTON SET FOR MXC615/620	MXC615-620-ACC-CM
CHAIRMAN BUTTON SET FOR MXC630/640	MXC630-640-ACC-CM
A/B BUTTONS FOR MXC615/620, QTY 10	MXC615/620-ACC-A/B



A/B BUTTONS FOR MXC630/640, QTY 10	MXC630/640-ACC-A/B
MUTE BUTTON FOR MXC615/620, QTY 10	MXC615/620-ACC-M
MUTE BUTTON FOR MXC630/640, QTY 10	MXC630/640-ACC-M
REPLY BUTTON FOR MXC615/620, QTY 10	MXC615/620-ACC-RPY
REPLY BUTTON FOR MXC630/640, QTY 10	MXC630/640-ACC-RPY

## Spare Parts

Spare Part Set CU 59xx/CU 61xx	SPS CU
--------------------------------	--------

## Important Product Information

The equipment is intended to be used in professional audio applications.

Changes or modifications not expressly approved by Shure Incorporated could void your authority to operate this equipment.

**Note:** This device is not intended to be connected directly to a public internet network.

EMC conformance to Environment E2: Commercial and Light Industrial. Testing is based on the use of supplied and recommended cable types. The use of other than shielded (screened) cable types may degrade EMC performance.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## Information to the user

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 23 cm between the radiator & your body.

This Class A digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

This device complies with Industry Canada licence-exempt RSS standard(s). Operation of this device is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

---

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.