



Superior
Conferencing
Solutions

DIS Digital Discussion Systems

DDS 5900

A **SHURE**® Company

User Manual

DDS 5900 Digital Discussion System



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2 Important

2.1 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.

2.1.1 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.

2.1.2 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.

2.1.3 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.

2.2 Compliancey

The equipment has been tested and found to comply with the limits of the following standards for digital devices:

- EN55103-1 (Emission)
- EN55103-2 (Immunity)
- EN60065 safety
- UL6500 safety

The device complies with part 15 of the FCC rules. 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.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Operation of this equipment in residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his 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.

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.

2.3 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.

2.4 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.

2.5 Warranty

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

3 Your DDS 5900 Discussion System

3.1 System Overview

The DDS 5900 Digital Discussion System is a system to be used at meetings, where a number of people are addressing the 'Floor' in a structured manner. Audio from the discussion units can be heard in the built-in loudspeakers.

The system also allows simultaneous interpretation for international conferences where multiple languages are used.

To enable all participants to understand the proceedings, interpreters can simultaneously translate the speaker's language, as required. These interpretations are distributed through the connected discussion units. Delegates can select the language of their choice and listen to it through headphones.

The DDS 5900 Digital Discussion System is comprised of one Central Unit and a number of Discussion Units and Gooseneck Microphones.

3.1.1 CU 5905 Central Unit



Figure 1. CU 5905 Central Unit

The Central Unit (CU) contains most of the intelligence for the DDS 5900 Digital Discussion System. Only one CU 5905 can be used in each system.

3.1.2 DC 5980P Discussion Unit



Figure 2. DC 5980P Discussion Unit

The discussion unit can be configured for the following functionality:

- Delegate with Speak/Request button
- Delegate with Speak/Request and Mute button
- Chairman with Speak and Delegate Off button
- Interpreter Unit

3.1.3 GM 59xx Gooseneck Microphone



Figure 3. GM 59xx Gooseneck Microphones

The Gooseneck Microphones are available in two lengths, 40 cm (15.75 in.) and 50 cm (19.7 in.) and are detachable from the discussion unit. They can be fixed to the unit by using a tool.

3.2 System technology

3.2.1 Audio transmission

The DDS 5900 Digital Discussion System is based on the digital transmission of audio from the discussion unit to the central unit and back to the built in loudspeakers in the discussion units.

The audio transmission is scrambled to avoid eavesdropping.

3.2.2 Features

The DDS 5900 Digital Discussion System has the following features:

- Fully digital
- Excellent audio quality
- "State of the Art" fully digital integrated discussion system offering interpretation and language distribution.
- Unique digital DATA and AUDIO bus called DCS-LAN.
- 10 incoming channels (8 floor channels + 2 interpreter channels) and one audio input.

- 3 distributed channels (1 floor + 2 interpreted channels).
- The discussion units are powered and controlled by the CU 5905 Central Unit, which drives up to 60 units on 2 chains.
- If more units are required, the EX 6010 Extension Unit or PS 6000 Power Supply is available.
- A total of 250 discussion units can be connected to the system.
- TCP/IP connection on CU 5905 for external operation of the system using a PC or a control system such as AMX® or Crestron®.

3.2.3 Cabling

The DDS 5900 system is connected using screened CAT5e cabling (F/UTP or U/FTP), ensuring a very cost effective installation and easy set-up of portable systems

The discussion units are daisy-chained to the central unit.

The number of units that can be connected to a central unit depends on the length of the feed cable and the length of the cable between each unit.

3.3 System components

3.3.1 DDS 5900 Discussion System

The DDS 5900 system consist of the following units:

- CU 5905 Central Unit
- DC 5980P Portable Discussion Unit
- GM 5923 Gooseneck Microphone, 40 cm
- GM 5924 Gooseneck Microphone, 50 cm
- SB 5980 Storage Box 10 DC 5980P and GM 59xx

3.3.2 Supported units, DCS 6000 System

The following units from the DCS 6000 Digital Conference System can be used in the DDS 5900 system:

- EX 6010 Extension Unit
- PS 6000 Power Supply
- RP 6004 Repeater/Splitter for four chains
- JB 6104 Junction Box with 4 outputs
- DH 6021 Delegate Headphone
- GM 6523 Gooseneck Microphone, 40 cm
- GM 6524 Gooseneck Microphone, 50 cm
- GM 6622 Shotgun Microphone

For detailed instructions in how to use the above units, please refer to the User Manuals for the relevant products.

4 Getting Started

4.1 Setting up the System the First Time

When setting up the system for the first time please follow the instructions in this section in the order shown.

1. Unpack the CU 5905 Central Unit and the DC 5980P Discussion Units and place them temporarily on a table.
2. Attach the button overlays to the DC 5980P units. Use the overlays delivered with the units for Delegate units and use the overlays delivered with the CU 5905 for Chairman and Interpreter units. Please refer to the 'Preparing the Discussion Unit' section for details. Please note, that the overlays are NOT designed to be removed after installation.
3. Connect the power cord to the CU 5900 Power Supply and connect the cable from the power supply to the CU 5905. Please refer to the 'CU 5905 Central Unit' section for details.
4. Connect the units with Chairman and Interpreter overlays to the DCS-LAN connector(s) on the CU 5905 using EC 6001-xx Cat5e extension cables.
5. Turn power 'On' to the CU 5900 Power Supply. The indicator in the power switch on the CU 5905 illuminates red.
6. Activate the power switch on the CU 5905. The indicator in the switch illuminates green. After about 15 seconds, the display in the CU is visible and the LEDs in the button overlay on the DC 5980P flash until the units are registered (less than 60 seconds).
7. Check that the units are working by touching the 'Speak' button. Please refer to 'DC 5980P Discussion Unit' section for details.
8. Change the unit type according to the attached overlay. Please refer to 'Configuration of the Unit' section for details.
9. Turn Off power
10. Place all the units in position, where they are to be used, observing the unit type.
11. Connect the units with EC 6001-xx Cat5e extension cables of suitable length to the DCS-LAN connector(s) on the CU 5905. Cables must not be bent to a radius less than 15 mm. Please refer to 'Cabling Guidelines' section for details.
12. Connect the GM 59xx Gooseneck Microphone to the unit
13. If required fix the gooseneck microphones to the units with the tool delivered with the CU 5905. Please refer to 'GM 59xx Gooseneck Microphone' section for details.
14. Turn on the power and wait for the system to become ready.
15. Touch the 'Speak' button on each of the units to check functionality.
16. Adjust the 'Loudspeaker volume' to a desired level using the interactive menu on the front of the CU 5905.

Please refer to the 'Using the Interactive Menu' section for details.

4.2 Connecting a PC

When connecting a PC directly to the CU 5905, follow the instructions in this section in the order shown.

1. Connect the PC and the CU 5905 with a standard LAN cable
2. Turn 'On' power to both units
3. On the PC, check that the network setting is set to 'Obtain an IP Address Automatically':
 - a) Navigate to 'Control Panel > Network and Sharing Center > Change adapter settings > Local Area Connection'.
 - b) Select 'Properties'
 - c) Select 'Internet Protocol Version 4 (TCP/IPv4)
 - d) Select 'Properties'
 - e) Change setting to 'Obtain an IP Address Automatically'
4. Using the interactive menu on the CU 5905, navigate to:
 - a) 'LAN setup > Acquire IP addr.'
 - b) Select 'Dynamic'.
5. Using the interactive menu on the CU 5905 navigate to:
 - a) LAN setup > IP address setup > IP address > Actual IP address
 - b) Note the IP address
6. Open the internet browser in the PC
7. Type 'http://IP-address', where 'IP address' is the address noted from the CU 5905
8. The CU 5905 browser interface opens.

Please refer to the 'Web Browser Setup and Control' section for details about using the CU 5905 web browser.

4.3 Cabling Guidelines

The DC 5980P Discussion Units are connected to the CU 5905 Central Unit using Cat5e F/UTP or U/FTP screened cables, however the following guidelines must be observed:

- Maximum cable length in one chain is 120 m (before inserting an RP 6004 Repeater in a chain). This includes interconnection cables between the units. The maximum usable cable length depends on the units connected and length of feed cables etc.
- If the number of units in the tables are used, cables must be AWG 24. AWG 26 cables will not allow as many units. DIS cables series EC 6001-xx are all AWG 24.
- Maximum cable length in one chain is 420 m when using RP 6004 Repeaters and Cat5e cables.

Although the 'Chain' output connectors have a 150 W supply, the 150 W of power is not all available with long cables. There is a power drop in the feed cable from the CU 5905 Central Unit to the units connected.

If the feed cables are short and the cables between the units are short, more units can be connected.

Please consult the next section for details about the number of units that may be connected.

4.4 Max. Number of Units to be Connected

The following tables show the maximum number of units that can be connected to a CU 5905 Central Unit or to an EX 6010 Extension Unit or a PS 6000 Power Supply.

In the tables, the 'Feed Cable' is defined as the cable between the CU 5905 (or EX 6010 / PS 6000) and the first DC 5980P and the 'Interconnecting Cable' is defined as the cable connecting two DC 5980Ps.

4.4.1 CU 5905 – DC 5980P in One Chain

The following table shows the maximum number of units that can be connected to a CU 5905 Central Unit when using only one of the two 'Chain' outputs.

The table also shows the number of units that can be connected to each 'Chain' output on an EX 6010 Extension Unit or to the 'Chain' output of a PS 6000 Power Supply.

Number of Units Connected using Only One Chain Output on CU 5905

Length of Feed Cable	Length of Interconnecting Cable	Total Cable Length	Max. Number of DC 5980P (1 output only)
10 m	1 m	63 m	54
30 m	1 m	77 m	48
50 m	1 m	91 m	42
100 m	1 m	128 m	29
10 m	2 m	104 m	48
30 m	2 m	114 m	43
50 m	2 m	122 m	37
100 m	2 m	140 m	27

4.4.2 CU 5905 – DC 5980P in Two Chains

The following table shows the maximum number of units, which can be connected to both 'Chain' outputs simultaneously on a CU 5905 Central Unit in total using only the supplied CU 5900 Power Supply.

If only one 'Chain' is used the information in the table above must be used.

Number of Units Connected using Both Chains

Length of Feed Cable	Length of Interconnecting Cable	Total cable length	Max. Number of DC 5980P (2 outputs)
10 m	1 m	2x39 m	2x30
30 m	1 m	2x58 m	2x29
50 m	1 m	2x76 m	2x27
100 m	1 m	2x122 m	2x23
10 m	2 m	2x66 m	2x29
30 m	2 m	2x84 m	2x28
50 m	2 m	2x100 m	2x26
100 m	2 m	2x142 m	2x22

4.4.3 CU 5905 – DC 5980P – JB 6104 (One Chain)

This configuration shows two DC 5980P Discussion Units each connected to an output on a JB 6104 Junction Box with 3m cables between each JB 6104.

General note: Maximum cable length from a JB 6104 to a DC 5980P is 10 m and maximum one DC 5980P is allowed on each output of a JB 6104.

Number of Units Connected using a JB 6104 Junction Box, using One Chain on the CU 5905

Length of Feed Cable	Length of Cable between each JB 6104	Total Cable Length	Number of JB 6104	Max. Number of DC 5980 P
10 m	3 m	76 m	23	46
30 m	3 m	87 m	20	40
50 m	3 m	92 m	15	30
100 m	3 m	133 m	12	24

4.4.4 CU 5905 – DC 5980P – JB 6104, Two Chains

This configuration shows two DC 5980P Discussion Units each connected to an output on a JB 6104 Junction Box with 3m cables between each JB 6104.

Number of Units Connected using JB 6104 Junction Box, using Two Chains on CU 5905

Length of Feed Cable	Length of cable between each JB 6104	Total cable length	Number of JB 6104	Max. number of DC 5980 P
10 m	3 m	2x46 m	2x13	2x26
30 m	3 m	2x63 m	2x12	2x24
50 m	3 m	2x83 m	2x12	2x24
100 m	3 m	2x127 m	2x10	2x20

5 CU 5905 Central Unit

5.1 Overview

The CU 5905 Central Unit provides the intelligence for the system. One CU 5905 is needed in each DDS 5900 system.

The CU 5905 Central Unit has the following features:

- Supports up to 250 Discussion Units
- Scrambled audio transmission
- Vox (voice activation)
- 2 interpretation channels
- Designed in a standard 1HE 19" cabinet
- CU 5900 External Power Supply for up to 60 Discussion Units

The CU 5905 is suitable for either table-top or 19-inch rack-mounted use. Four feet (for table top use) and two mounting brackets (for rack mounting) are supplied.

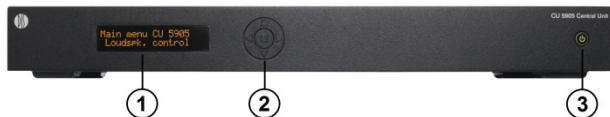


Figure 4. Front View of CU 5905

1. **Menu display** – A 2x20 character OLED-display is used as an interactive display for configuring the system.
2. **Menu buttons** – 5-button keypad for configuring the unit in combination with the display (1).
3. **Mains on/off switch** – After switching the mains on, the central unit starts up and the display (1) will light-up after app. 15 seconds. Any connected EX 6010 Extension Units or PS 6000 Power Supply will automatically be powered up. The indication in the switch is lighting Green, when power is switched 'On'. A red light indicates that power is connected to the central unit, but the unit is not switched 'On' (Standby).



Figure 5. Back view of CU 5905

1. **Power Supply input** – Connection of the external CU 5900 Power Supply (48V/3A). The power supply is provided together with the CU 5905.



Figure 6. CU 5900 Power Supply

2. **Chain outputs** – Two RJ45 connectors for connecting a DC 5980P Discussion Unit. The connection and protocol is called DCS-LAN.

Important: The 'Chain' outputs are only for connecting DC 5980P Discussion Units or other DCS-LAN compatible equipment. Connecting a LAN (TCP/IP) connection from a third party device to this output may damage both the third party device and the CU 5905.

3. **LAN (TCP/IP) connector** – A RJ45 connector for connection to local area network (LAN). This connector is used to connect to the built-in web application or for connection to a control system like AMX® or Crestron®.
4. **Audio output A, B, C & D** – Four male XLR3 connectors for connection to PA systems, Audio Mixers, Audio Recorders or Language Distribution System etc.
5. **Audio input In 1 & In 2** – Two female XLR3 connectors for extra audio inputs. 'In 1' is used to connect symmetrical, auxiliary audio signals such as a wireless microphone to the floor language. 'In 2' is used for connection of an "Emergency Evacuation Message (EEM)" audio signal.
6. **Emergency switch connector** – A terminal block socket for a single, 'normally open' switch. When the switch is closed, the audio signal on the 'In 2' connector is distributed to all output channels, overriding all other audio inputs.

Note: There is no volume control available for setting the volume on 'In 2'. The volume has to be set at the equipment generating the "Emergency Evacuation Message (EEM)" audio signal.

5.2 Simplified Audio Schematic

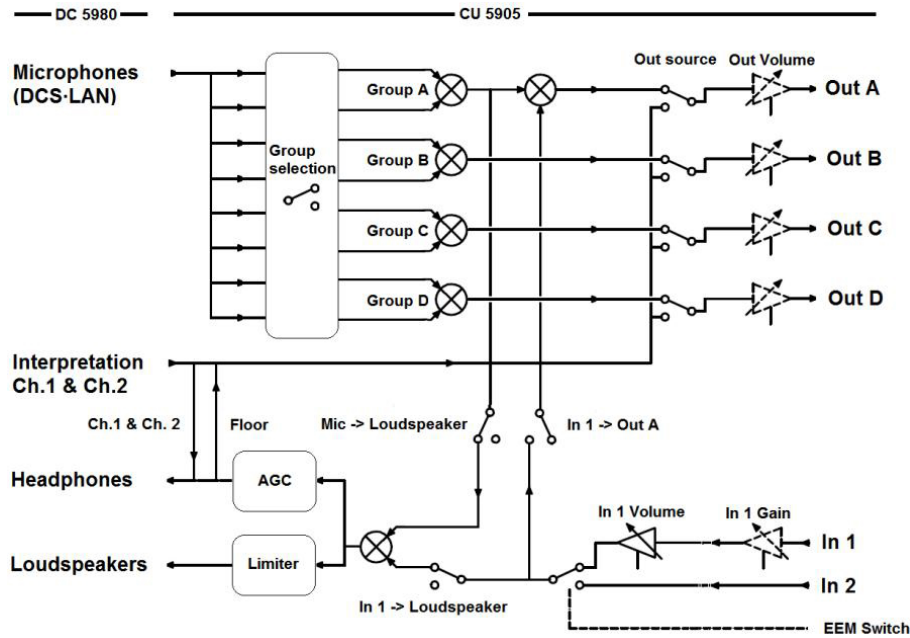


Figure 7. DDS 5900 Digital Discussion System Audio Schematic

5.3 Physical Installation

The CU 5905 Central Units can be placed on a table or installed in a standard 19" rack.

When installing the unit in a 19" rack, the supplied 19" brackets are fixed to the front side of the CU 5905 Central Unit by unscrewing the screws holding the top and bottom cover and then attach the brackets using the same screws.

The unit has a built-in fan that draws air in on the left side of the unit and exhausts air on the right side. This allows units in 19" racks to be stacked close with other units without extra room for cooling air between them.

Make sure that other units allow this type of air flow.

5.4 Connections

This section provides an overview of the typical system connections using the CU 5905 Central Unit.

Although the schematics are typical and are intended to give a general overview, combinations of the schematics are also very commonly used.

Both of the DCS-LAN connectors on the CU 5905 can be used for connecting DC 5980P Discussion Units.

- Refer to 'CU 5905 – DC 5980P in One Chain' section for information about the number of units that can be connected using one chain.
- Refer to 'CU 5905 – DC 5980P in Two Chains' section when using two chains.

5.4.1 Connecting DC 5980P Units

The DC 5980P Discussion Units are connected to the CU 5905 using EC 6001-xx Cat5e cables.



Figure 8. Connecting the DDS 5900 Digital Discussion System.

5.4.2 Connecting a PC

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables and is connected to a PC with a LAN cable.

Opening a browser in the PC allows you to configure the system and control the Discussion Units from the PC. Please refer to 'Web Browser' section for more information.

Hint: On older PC's you may need to setup a fixed IP address on both the PC and the CU.

Note: Depending on the type of PC, a 'Crossed' LAN cable may have to be used.

Instead of using a 'Crossed' LAN cable, a LAN Router may be inserted.

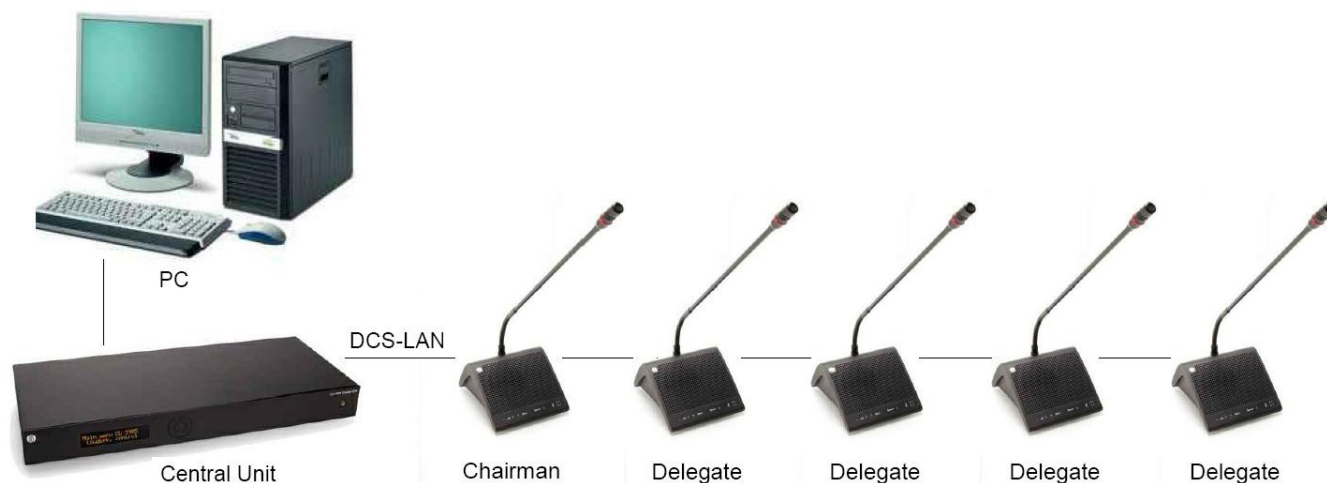


Figure 9. Connecting the DDS 5900 Digital Discussion System to a PC

5.4.3 Connecting a PC and an iPad

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables.

A wireless access point with built-in router is used for connection to the CU 5905 and the PC. The iPad is connected wirelessly.

Opening the browser in the PC or on the iPad gives you the option of configuring the system and controlling the Discussion Units from the PC and/or the iPad.

Please refer to 'Web Browser' section for more information.



Figure 10. Connecting the DDS 5900 Digital Discussion System to a PC and an iPad

5.4.4 Connecting an Audio Recorder

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables.

This configuration is used when 'Floor' audio or audio from one or more microphones is recorded.

Use the 'Group' selection for the four outputs and select the seats for each group. Refer to 'Web Browser' section, item #8.



Figure 11. Connecting the DDS 5900 Digital Discussion System to an Audio Recorder.

5.4.5 Connecting an Audio Mixer

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables.

This configuration is used when the volume from one or more microphones must be controlled separately or equalization is needed. One or more outputs are connected to the external mixer, where the control or equalization is done.

The audio from the audio mixer is then sent back to the CU using the 'Audio In 1' input.

Use the 'Group' selection for the four outputs and make seat selection for each group. Refer to 'Web Browser' section, item #8.

Important: If 'Out A' is also sent to the mixer, configure the following settings:

- 'CU 5905 Setup > Audio > Loudspeaker Control > Microphone -> Loudspeaker' set to 'Off'.
- 'In 1 -> Out. A' is set to un-selected in the selection 'CU 5905 Setup > Audio > Input/Output Control > Audio In 1'.

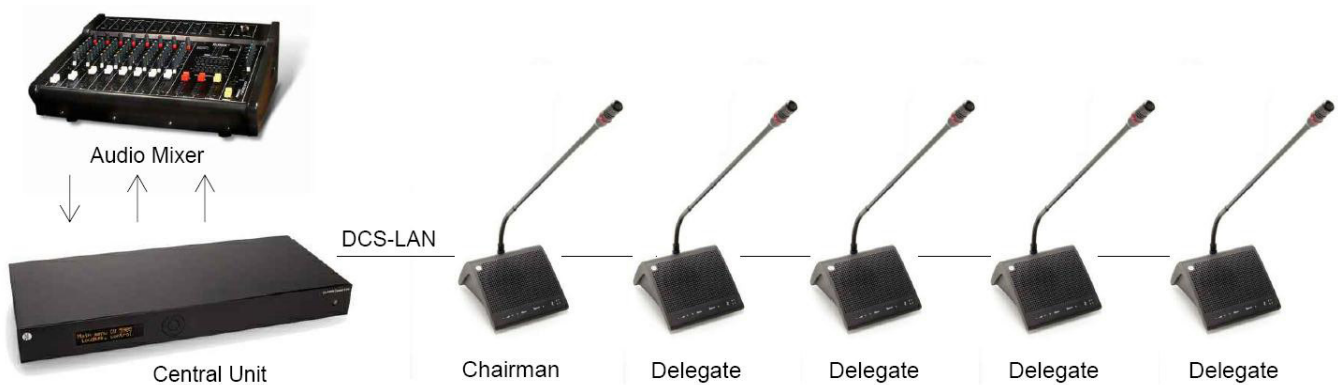


Figure 12. Connecting the DDS 5900 Digital Discussion System to an Audio Mixer.

5.4.6 Connecting Interpretation Units

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables.

Both the DCS-LAN connectors on the CU 5905 can be used for connecting DC 5980P Discussion Units.

In this example, two units are configured as Interpreter Units and DH 6021 Headphones are connected to the units. Audio from the Interpreter Units can then be heard in the headphones connected to the Chairman and Delegate Units.

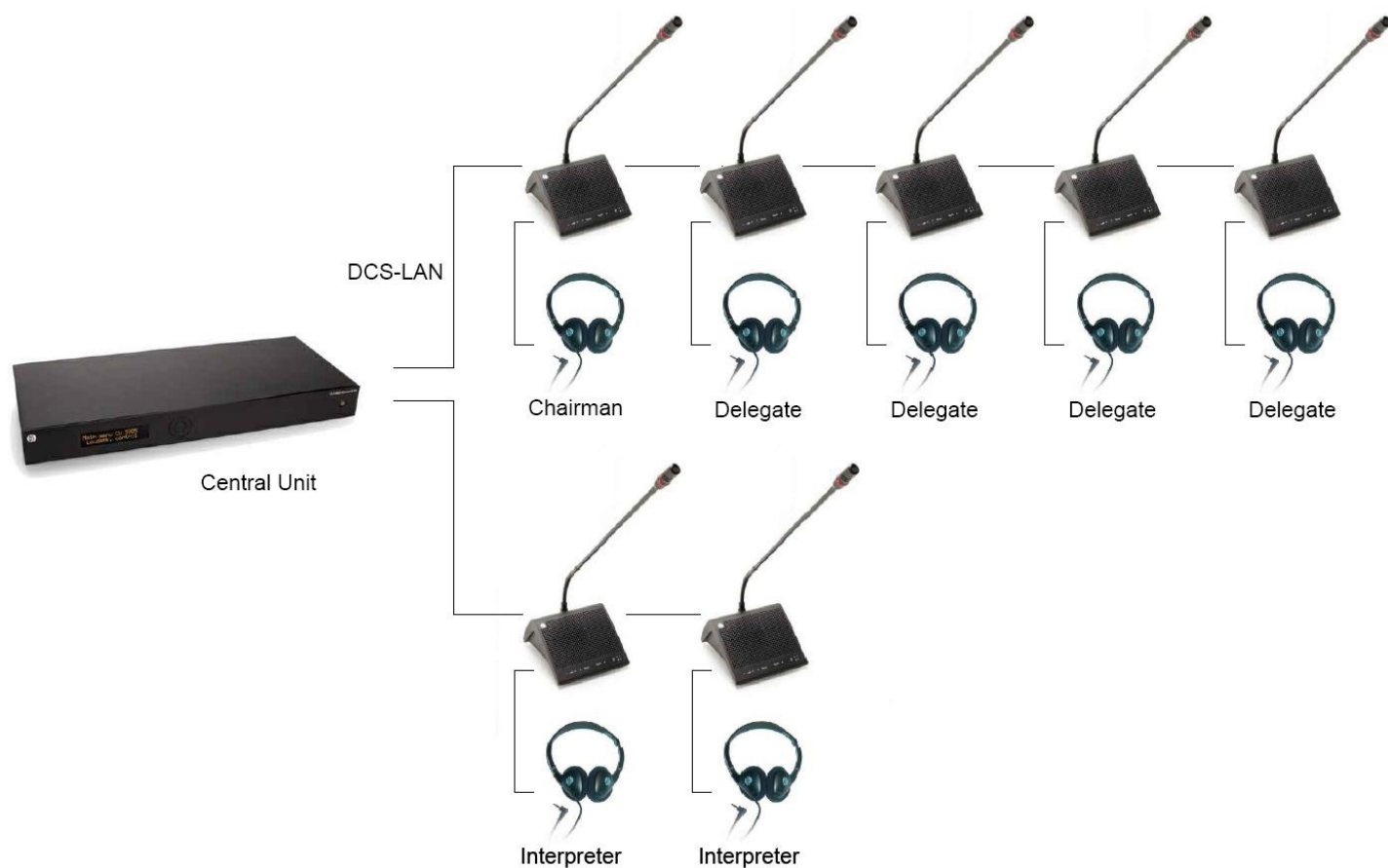


Figure 13. Connecting the DDS 5900 Digital Discussion System with Interpretation Functionality.

5.4.7 Using Wireless Language Distribution

The CU 5905 is connected to the DC 5980P Discussion Units using EC 6001-xx Cat5e cables. Both the DCS-LAN connectors on the CU 5905 can be used for connecting DC 5980P Discussion Units.

In this example, two units are configured as Interpreter Units and DH 6021 Headphones are connected to the units. Audio from the Interpreter Units can be heard in the headphones connected to the Chairman and Delegate Units.

A wireless language distribution system like 'DCS 6000 Digital Infrared Language System' can then be connected to the Audio Out connectors (B, C and D), where the source to the outputs are configured as the 'Floor' and interpreter channels. Refer to 'Web Browser' section, item #8.

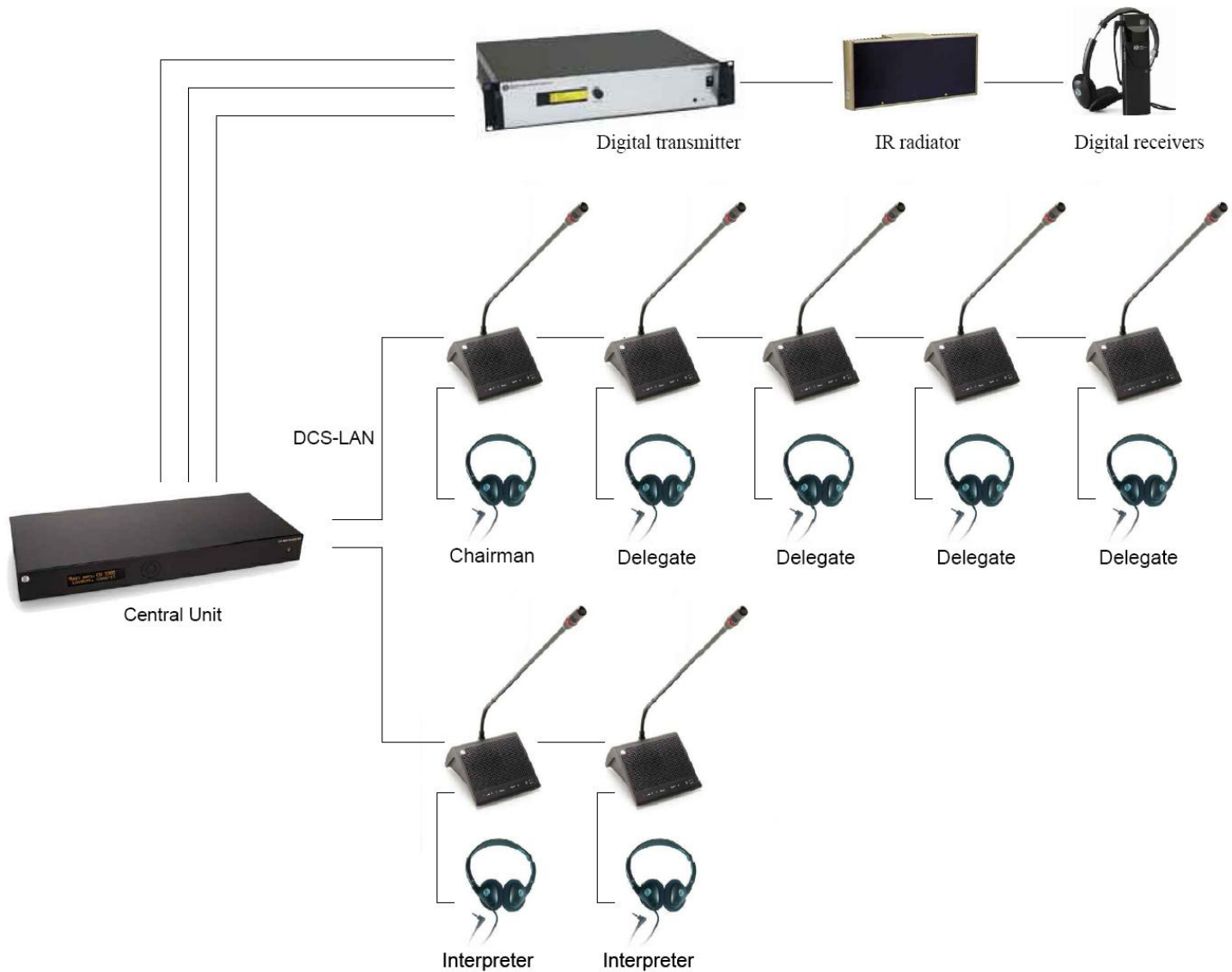


Figure 14. Connecting the DDS 5900 Digital Discussion System with Interpretation Functionality

5.4.8 Connecting an emergency signal

To use the emergency signal function, a switch (normally-open) must be connected to the emergency switch connector. When the switch is closed an "Emergency Evacuation Message (EEM)" audio signal present on the 'In 2' input is distributed to all output channels, overriding all other audio inputs.

Important: The level of the signal must be controlled externally.

5.5 Using the Interactive Menu

5.5.1 Overview

The major configurations and operation options of the CU 5905 are selected through an interactive menu, using the 2x20 character OLED display and the 5-button keypad.

The figure below gives an overview of the menu structure, however for a general description of the settings in the menu, refer to the 'Web Browser' section, where all of the CU 5905 settings are explained.

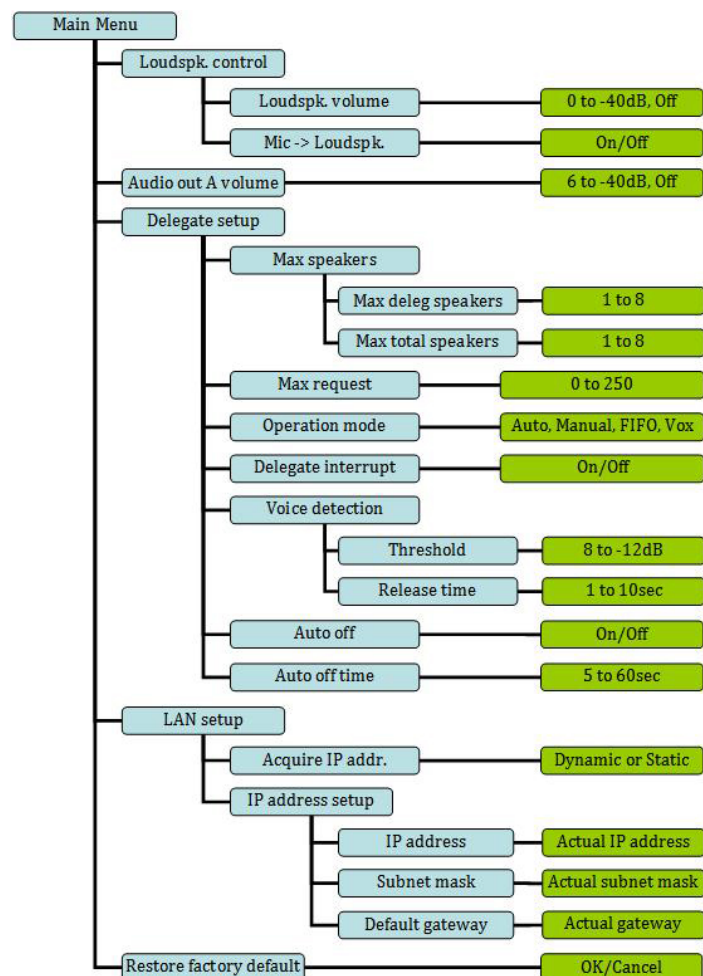


Figure 15. Menu Overview

5.5.2 Navigate through the Menu

Navigation in the menu and changing parameters is done using the 5-button keypad located on the front of the CU 5905:

- Cycle through the menu items (Blue marking) with the four 'arrow' buttons (Left-Right, Up-Down).
- Navigate to a settable option (Green marking).
- Cycle through the available values for a settable option using the 'arrow' buttons Up-Down.

Press the 'Enter' button in the center to accept the value. Pressing the Enter button accepts the selection made, and at the same time it confirms the possible changes made within the selection. Note that some changes are applied immediately and confirmation is not required.

5.6 Web Browser Setup and Control

5.6.1 CU 5905 Setup (Browser)

All configurations and operation options of the CU 5905 can be set using a browser on a PC, tablet or iPad. When the 'IP address' or 'Host Name' is typed into the browser, the connection to the CU is established and the 'CU 5905 Setup' screen is displayed.

Important: The 'CU 5905 Web Browser Control' has been tested with the following browsers:

IE8/9+
Firefox 10+
Safari and Chrome

Other browsers might work but have not been tested. Version of IE prior to v8 will **not** work.

CU 5905 Setup

dis-ste.local

System

System Status

LAN Setup

Security

Language

Audio

Configuration

Operation

Diagnostics

Microphone Control

Unit Count

Chain	Found	Lost
A	3	0
B	0	0
Total	3	0

System Status

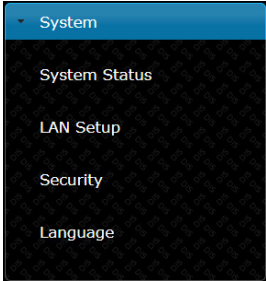

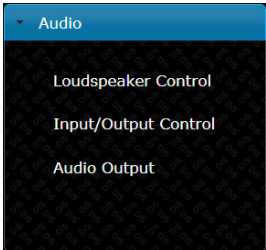

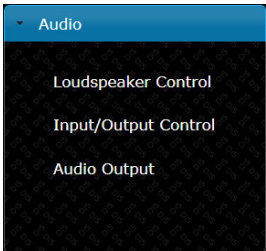
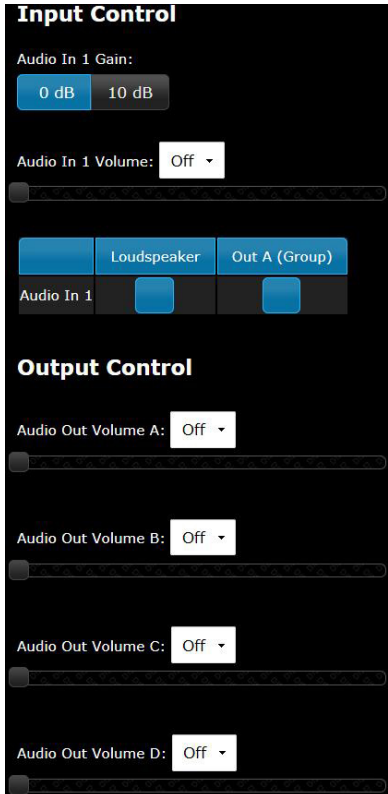
Serial Number	Chain	Type	State
002.047.046	A	DC5980 DM	Active
002.047.047	A	DC5980 CM	Active
002.047.057	A	DC5980 DM	Active

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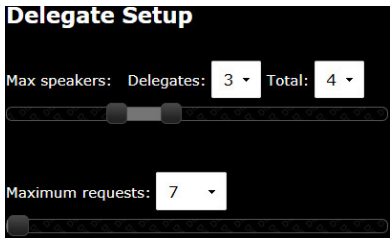
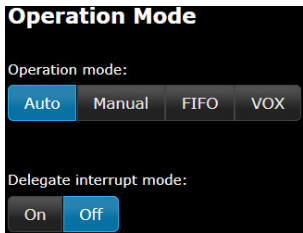
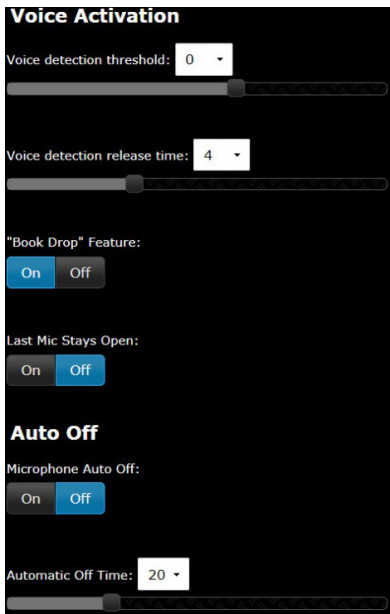
The following tables show all menu items in the browser menu with a detailed description of the settings available.

#	Menu	Settings	Description																																				
1.	<div><div>▸ System</div><div>▸ Audio</div><div>▸ Configuration</div><div>▸ Operation</div><div>▸ Diagnostics</div><div>▾ Microphone Control</div></div>		<p>There are six menu options in the browser control. The first five options select sub-menus for configuring and setting up the CU 5905.</p> <p>The last menu option switches to the Microphone Control screen.</p>																																				
2.	<div><div>▾ System</div><div>System Status</div><div>LAN Setup</div><div>Security</div><div>Language</div></div>	<div><div>System Status</div><table><thead><tr><th>Serial Number</th><th>Chain</th><th>Type</th><th>State</th></tr></thead><tbody><tr><td>000.013.215</td><td>A</td><td>DC5980 CM</td><td>Active</td></tr><tr><td>001.084.235</td><td>A</td><td>DC5980 DM</td><td>Active</td></tr><tr><td>000.238.112</td><td>A</td><td>DC5980 DM</td><td>Active</td></tr><tr><td>000.242.100</td><td>A</td><td>DC5980 DM</td><td>Active</td></tr><tr><td>002.047.021</td><td>A</td><td>DC5980 IS</td><td>Active</td></tr></tbody></table><div><div>Unit Count</div><table><thead><tr><th>Chain</th><th>Found</th><th>Lost</th></tr></thead><tbody><tr><td>A</td><td>5</td><td>0</td></tr><tr><td>B</td><td>0</td><td>0</td></tr><tr><td>All</td><td>5</td><td>0</td></tr></tbody></table></div></div>	Serial Number	Chain	Type	State	000.013.215	A	DC5980 CM	Active	001.084.235	A	DC5980 DM	Active	000.238.112	A	DC5980 DM	Active	000.242.100	A	DC5980 DM	Active	002.047.021	A	DC5980 IS	Active	Chain	Found	Lost	A	5	0	B	0	0	All	5	0	<p>Unit Status – Shows the connected Discussion Units with Serial Number and Type of units. The 'State' field shows if a unit is 'Active' (connected) or 'Lost' (not connected).</p> <p>If a unit is shown as 'Locked' the unit is not compatible with the DDS 5900 System.</p> <p>Unit Count – Shows the number of connected units on each chain.</p>
Serial Number	Chain	Type	State																																				
000.013.215	A	DC5980 CM	Active																																				
001.084.235	A	DC5980 DM	Active																																				
000.238.112	A	DC5980 DM	Active																																				
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Chain	Found	Lost																																					
A	5	0																																					
B	0	0																																					
All	5	0																																					
3.	<div><div>▾ System</div><div>System Status</div><div>LAN Setup</div><div>Security</div><div>Language</div></div>	<div><div>LAN Setup</div><div>CU hostname: dis-cu</div><div>MAC Address: E4:67:BA:00:00:04</div><div>IP configuration: Dynamic Static</div><div>IP address: 192.168.10.110</div><div>Subnet mask: 255.255.255.0</div><div>Gateway address: 192.168.10.1</div><div>Apply Changes</div></div> <div><div>LAN Setup</div><div>CU hostname: dis-cu</div><div>MAC Address: E4:67:BA:00:00:04</div><div>IP configuration: Dynamic Static</div><div>IP address: 192.168.10.110</div><div>Subnet mask: 255.255.255.0</div><div>Gateway address: 192.168.10.1</div><div>Apply Changes</div></div>	<p>CU hostname – A host name can be assigned to the CU 5905. This name can be used to connect to the CU 5905 with a browser instead of using the IP-address.</p> <p>After a hostname is assigned, type the following in the browser:</p> <p>http://hostname'.localwhere 'hostname' is the assigned name.</p> <p>IP configuration – Select 'Dynamic' if the CU is connected to a network with a DHCP server. Otherwise select 'Static' and assign a fixed IP address to the CU. Default IP configuration is "Dynamic".</p> <p>Select 'Apply Changes' to save the changes made.</p> <p>The actual IP address can be found in this screen or by using the interactive menu on the CU 5905:</p> <p>LAN setup > IP address setup > IP address > Actual IP address.</p>																																				
4.	<div><div>▾ System</div><div>System Status</div><div>LAN Setup</div><div>Security</div><div>Language</div></div>	<div><div>Password Setup</div><div>User name:</div><div>Password:</div><div>Change Password</div></div>	<p>Password Setup – Used for setting 'User name/ Password' for browser connection.</p>																																				

#	Menu	Settings	Description
5.			<p>Language – Select the language for use in the CU browser interface.</p>
6.			<p>Loudspeaker Control – The 'Loudspeaker Volume' sets the volume of the built-in loudspeakers in the discussion units.</p> <p>The 'On/Off' button is used for switching on/off the audio from the Discussion Units to the built-in loudspeakers and headphones. Only audio from 'Seats' (units) selected in 'Group A' will be available in the loudspeakers.</p>
7.			<p>Input/Output Control – The 'Audio In 1 Volume' is used to set the level of the input signal.</p> <p>The gain of the 'Audio In' signal can be set to '0 dB' or '10 dB'. When set to '10 dB', the input signal is amplified 10 dB.</p> <p>The 'Audio In 1' signal can be routed to the 'Loudspeakers' (including headphones) in the Discussion Units as well as to 'Out. A' output using the two selection buttons.</p> <p>The 'Audio In 1' signal is only be present at 'Out. A' if 'Group' is selected as the source to the 'Out A' output, where it is mixed with the 'Group A' signal. See item 7.</p> <p>The 'Audio Out Volume' can be set for the four audio outputs (A, B, C and D).</p>

#	Menu	Settings	Description																																																																						
8.	<div><div>Audio</div><div>Loudspeaker Control</div><div>Input/Output Control</div><div>Audio Output</div></div>	<div><div>Audio Output</div><table><tr><th></th><th>Out A</th><th>Out B</th><th>Out C</th><th>Out D</th></tr><tr><td>Source</td><td>Group</td><td>Floor</td><td>Ch.1</td><td>Ch.2</td></tr></table><div><div>Group Setup</div><table><tr><th>Seat Number</th><th>Group A</th><th>Group B</th><th>Group C</th><th>Group D</th></tr><tr><td>1</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>2</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>3</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>4</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table><div>Submit Changes</div></div><div><div>Audio Output</div><table><tr><th></th><th>Out A</th><th>Out B</th><th>Out C</th><th>Out D</th></tr><tr><td>Source</td><td>Group</td><td>Group</td><td>Group</td><td>Group</td></tr></table><div><div>Group Setup</div><table><tr><th>Seat Number</th><th>Group A</th><th>Group B</th><th>Group C</th><th>Group D</th></tr><tr><td>1</td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>2</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>3</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr><tr><td>4</td><td><input checked="" type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td><td><input type="checkbox"/></td></tr></table><div>Submit Changes</div></div></div></div>		Out A	Out B	Out C	Out D	Source	Group	Floor	Ch.1	Ch.2	Seat Number	Group A	Group B	Group C	Group D	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	<input checked="" 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"/>		Out A	Out B	Out C	Out D	Source	Group	Group	Group	Group	Seat Number	Group A	Group B	Group C	Group D	1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	3	<input checked="" 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"/>	<p>Audio Output – The 'Source' can be selected for each of the four outputs. The choices using the dropdown menu are:</p> <p>Group, Floor, Ch.1 or Ch.2.</p> <p>When 'Group' is selected for 'Out A', the 'Group A' is the source for the three other outputs.</p> <p>The 'Floor, Ch.1, Ch.2' selection is used either for recording of the interpreted languages or for connection to a wireless language distribution system.</p> <p>If 'Floor, Ch.1, Ch.2' is selected for an output (Out A, B, C or D), the corresponding group is disabled in the 'Group Setup'</p> <p>Group Setup – The Discussion Units can be assigned individually to four groups.</p> <p>'Group A' is always used as the source for the built-in loudspeakers. A unit can be selected in 'Group A' and/or in one of the other three groups. If a unit is not selected in 'Group A' the audio from this unit is not available in the built-in loudspeakers.</p> <hr/> <p>The 'Group' facility is used if separate microphones are required for recording or if external equalization or volume control is required. Note: A microphone can only be present in 'Group A' and in one other group.</p>
	Out A	Out B	Out C	Out D																																																																					
Source	Group	Floor	Ch.1	Ch.2																																																																					
Seat Number	Group A	Group B	Group C	Group D																																																																					
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																					
3	<input checked="" 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"/>																																																																					
	Out A	Out B	Out C	Out D																																																																					
Source	Group	Group	Group	Group																																																																					
Seat Number	Group A	Group B	Group C	Group D																																																																					
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																																					
2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>																																																																					
3	<input checked="" 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"/>																																																																					

#	Menu	Settings	Description																																																							
9.	<div><div>Configuration</div><div>Unit to Seat Relation</div><div>Unit Type Change</div><div>Factory Defaults</div></div>	<div><div>Unit to Seat Relation</div><table><thead><tr><th>Serial Number</th><th>Seat Number</th><th>Delegate Name</th></tr></thead><tbody><tr><td>000.013.215</td><td>1</td><td>Seat 1</td></tr><tr><td>001.084.235</td><td>2</td><td>John Smith</td></tr><tr><td>000.238.112</td><td>3</td><td>Seat 3</td></tr><tr><td>000.242.100</td><td>4</td><td>Seat 4</td></tr></tbody></table><div><div>Submit Changes</div><div>Reset Names</div></div></div> <div><div>Unit to Seat Relation</div><table><thead><tr><th>Serial Number</th><th>Seat Number</th><th>Delegate Name</th></tr></thead><tbody><tr><td>000.013.215</td><td>1</td><td>Seat 1</td></tr><tr><td>001.084.235</td><td>2</td><td>John Smith</td></tr><tr><td>000.238.112</td><td>4</td><td>Seat 3</td></tr><tr><td>000.242.100</td><td>4</td><td>Seat 4</td></tr></tbody></table><div><div>Submit Changes</div><div>Reset Names</div></div></div> <div><div>Unit to Seat Relation</div><table><thead><tr><th>Serial Number</th><th>Seat Number</th><th>Delegate Name</th><th></th></tr></thead><tbody><tr><td>000.013.215</td><td>1</td><td>Seat 1</td><td></td></tr><tr><td>001.084.235</td><td>2</td><td>John Smith</td><td></td></tr><tr><td>000.238.112</td><td>3</td><td>Seat 3</td><td></td></tr><tr><td>000.242.100</td><td>4</td><td>Seat 4</td><td></td></tr></tbody></table><div><div>Submit Changes</div><div>Reset Names</div></div></div> <div><p>Unit to Seat Relation – All units connected to the system are shown in this list, using 'Serial Number' and 'Seat Number'.</p><p>When a unit is connected for the first time, it is assigned the next 'Seat Number' and assigned a 'Delegate Name' in the format 'Seat x', where 'x' is the assigned seat number. The assigned 'Delegate Name' can be changed to show the actual name of the delegate placed in the seat.</p><p>After assigning names, the 'Submit Changes' has to be selected.</p><p>The 'Seat Number' can be changed as well. If the same number is typed into two seats, it is marked with a red frame and the 'Submit Changes' button is disabled. The 'Seat Number' is numerical, in the range 1 to 65535.</p><p>When the cursor is moved to a seat number field, the red light ring in the microphone in the corresponding Discussion Unit flashes until the cursor is moved to another field or 'Submit Changes' has been selected. This feature makes it easy to re-number the units.</p><p>If units are disconnected, they are marked with a yellow indicator in the list. The units can be removed from the list either individually or as a group by clicking the yellow button.</p><p>The 'Reset Names' button deletes all assigned delegate names.</p></div>	Serial Number	Seat Number	Delegate Name	000.013.215	1	Seat 1	001.084.235	2	John Smith	000.238.112	3	Seat 3	000.242.100	4	Seat 4	Serial Number	Seat Number	Delegate Name	000.013.215	1	Seat 1	001.084.235	2	John Smith	000.238.112	4	Seat 3	000.242.100	4	Seat 4	Serial Number	Seat Number	Delegate Name		000.013.215	1	Seat 1		001.084.235	2	John Smith		000.238.112	3	Seat 3		000.242.100	4	Seat 4		10.	<div><div>Configuration</div><div>Unit to Seat Relation</div><div>Unit Type Change</div><div>Factory Defaults</div></div>	<div><div>Unit Type Change</div><div>Allow unit type change:</div><div><div>On</div><div>Off</div></div></div> <div><p>Unit Type Change – When this feature is set to 'On', it is possible to change the unit type of the connected Discussion Units as specified in 'Configuration of the unit' section.</p><p>When set to 'Off' the unit type is locked and cannot be changed.</p></div>	11.	<div><div>Configuration</div><div>Unit to Seat Relation</div><div>Unit Type Change</div><div>Factory Defaults</div></div>	<div><div>Reset to Factory Defaults</div><div>Reset</div></div> <div><p>Reset to Factory Defaults – When the reset button is activated, the settings in the CU 5905 are reset to factory defaults.</p><p>When resetting the system from a browser, the IP and security settings are not changed.</p><p>To reset IP settings and security settings, use 'Factory defaults' on the interactive menu located on the CU 5905.</p></div>
Serial Number	Seat Number	Delegate Name																																																								
000.013.215	1	Seat 1																																																								
001.084.235	2	John Smith																																																								
000.238.112	3	Seat 3																																																								
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000.242.100	4	Seat 4																																																								

#	Menu	Settings	Description
12.	<div> <div>Operation</div> <div> <div>Delegate Setup</div> <div>Operation Mode</div> <div>Voice Detection</div> </div> </div>		<p>Delegate Setup – The number of 'Max speakers: Total' defines the maximum number of Discussion Units, which can speak at the same time. This includes both delegate and chairman units.</p> <p>The number of 'Max speakers: Delegates' defines the maximum number of Delegate Discussion Units, which are allowed to speak at the same time.</p> <p>Please note that a Chairman Unit can always be switched ON as long as the number set in 'Max. Speakers: Total' is not exceeded.</p> <p>'Maximum requests' defines how many delegates requesting to speak can be inserted into the 'Request' list.</p>
13.	<div> <div>Operation</div> <div> <div>Delegate Setup</div> <div>Operation Mode</div> <div>Voice Detection</div> </div> </div>		<p>Operation Mode – Used for switching between the operation modes. Please refer to the 'Operation Modes' section.</p> <p>Delegate Interrupt Mode – When set to 'On', a delegate may interrupt another delegate who is speaking, if the number of delegates speaking has reached the number specified in the setting 'Max speakers: Delegates'.</p>
14.	<div> <div>Operation</div> <div> <div>Delegate Setup</div> <div>Operation Mode</div> <div>Voice Detection</div> </div> </div>		<p>Voice Activation – Those settings determine the behavior of the system when working in VOX mode.</p> <p>The 'Voice detection threshold' can be set from '-12 to '8' in increments of '1'.</p> <p>The default value is '0'. Setting to a lower value makes the microphone more sensitive.</p> <p>The 'Voice detection release time' can be set from 1 to 10 seconds in 0.5 sec increments.</p> <p>This setting is used to establish the time from when the delegate stops talking until the microphone turns off. The default value is 4 sec.</p> <p>When the "Book Drop" Feature is enabled, a short 'unwanted' noise will only make the microphone to open a few seconds.</p> <p>"Last Mic Stays Open" feature is used when the DDS 5900 system is used for video or audio conferences where equipment with echo-canceling features is in use.</p> <p>Auto Off – When 'Microphone Auto Off' is set to 'On' a Discussion Unit automatically turns off the microphone when the delegate stops talking. The time is determined by the 'Auto Off time' setting.</p> <p>The 'Automatic Off Time' sets the time from when the delegate stops speaking until the microphone turns off. The value can be set from 5 to 60 seconds in 5 second increments. The default value is 5 sec.</p> <p>When the system is set to 'VOX mode Auto Off', settings are disabled.</p>
15.	<div> <div>Diagnostics</div> <div> <div>Report</div> </div> </div>		<p>Report – If a report is needed for factory diagnostic purposes.</p> <p>The report can be printed using an installed printer on the PC or saved to a file.</p>

5.6.2 CU 5905 Mic. Control (Browser)

The microphone control screen is selected by clicking the 'Microphone Control' button in the 'CU 5905 Setup' screen.

The next table shows the screens available with a description of their functionality.



Figure 16. CU 5905 Browser Setup

#	Screen	Description
15.		<p>The microphone control page provides the option of switching On/Off microphones and depending on 'Operation mode' setting, placing microphones into the 'Request to speak' queue.</p> <p>Speak ... – Displays the 'Delegate Microphone (Speak)' list. See #17 later in this table.</p> <p>Request ... – Displays the 'Delegate Microphone (Request)' list. See #18 later in this table. Next On – Pressing the 'Next On' button turns on the first request on the request list</p> <p>All Del. Off – Pressing the 'All Del Off' button turns off all delegate microphones</p> <p>All Req. Off – Pressing the 'All Req. Off' button empties the 'Requests' list.</p> <p>Operation mode – Drop down menu is used to switch between the operation modes. Please refer to the 'Operation Modes' section.</p>
16.		<p>Speakers – Shows the list of active speakers. The number of list lines are defined by the setting in 'Max. Total Speakers'.</p> <p>A speaker is turned off by clicking the speaker name.</p> <p>Requests – Shows the list of delegates requesting to speak. The number of list lines are defined by the setting in 'Maximum Requests'.</p> <p>A delegate is turned on by clicking the speaker name.</p>
17.		<p>Delegate Microphones (Speak) – Shows the list of seats with delegates and chairmen. Clicking a name turns on the microphone.</p> <p>If a unit is disconnected the seat is greyed out and cannot be activated.</p>
18.		<p>Delegate Microphones (Requests) – Shows the list of seats with delegates and chairmen. Clicking a delegate name places the delegate in the request queue. A Chairman is not placed in the request queue.</p> <p>If a unit is disconnected the seat is greyed out and cannot be activated.</p>

5.6.3 Using Web Browser on a PC

Opening the 'CU 5905 Setup' in one window and the 'CU 5905 Microphone Control' in another window or tab makes it easy to switch between the two screens.

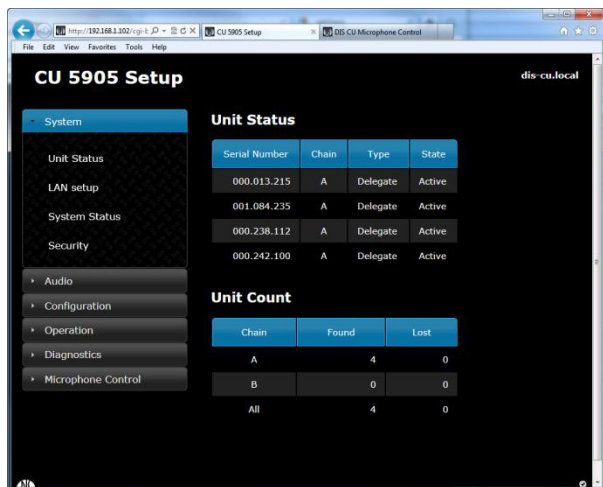


Figure 17. CU 5905 Setup Tab selected

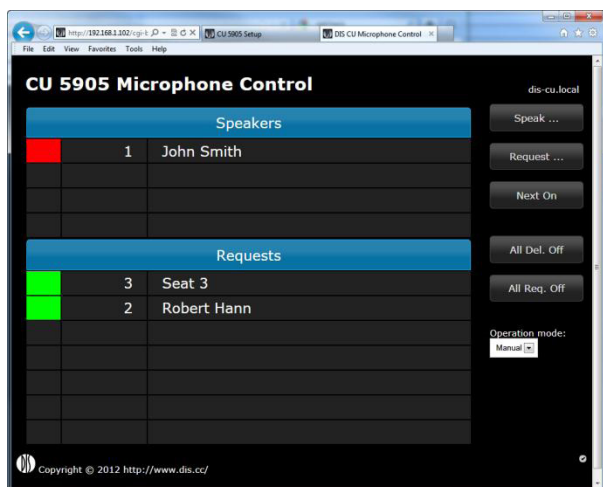


Figure 18. CU 5905 Microphone Control Tab selected

5.6.4 Using Web browser on an iPad

Creating shortcuts on the desktop for 'CU 5905 Setup' and the 'CU 5905 Microphone Control' makes it easy to start the browser. The screen starts in 'full screen mode'.

Open the CU 5905 Browser application using the 'Safari' browser on the iPad. Then select 'Add to Home screen':

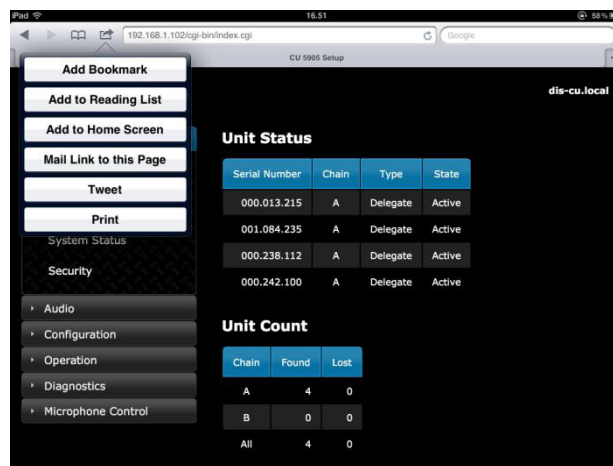


Figure 19. Select 'Add to Home Screen'

Click the 'Add' button and a shortcut to the 'CU 5905 Setup' is placed on the desktop of the iPad.

Click 'Microphone Control' and make a shortcut for this screen also. The two shortcuts can now be activated separately, opening the screens in 'full screen mode'.



Figure 20. CU 5905 Browser shortcuts on the desktop

5.7 Operation Modes

5.7.1 Operation Mode

The "Operation Mode" determines the behavior of the microphone system.

- Auto (or Automatic) mode allows the Discussion Units to be switched on immediately upon touching the 'Speak' button.

This is indicated by a red light in the 'Speak' lamp and in the light ring in the gooseneck microphone. Touching the 'Speak' button again turns the microphone off.

A Chairman Unit is considered as always being in Auto or VOX mode.

- Manual mode features a request list, where 'Delegates' are inserted in a queue upon touching the 'Speak' button. This is confirmed by a steady green light in the 'Request' indicator on the delegate unit. The request can be canceled by touching the button again.

The delegate unit can only be switched 'On' using the CU 5905 browser interface on a PC/iPad or from a control system like AMX® or Crestron®. This is indicated by red light in the 'Speak' lamp in the Discussion Unit. At this point the delegate can switch off the microphone by touching the 'Speak' button.

Note: Manual mode is never selected/used on the CU 5905 if a Browser, AMX®, Crestron® or other "Control Facility" is not connected.

- FIFO is an automated mode. The Discussion Unit functions in the same way as 'automatic' mode as long as the number of active delegate units is less or equal to the selected maximum speakers.

When the maximum number is reached, the next delegate touching their 'Speak' button is placed in the request queue until the maximum requests is reached. The green 'Request' lamp on the delegate unit in the top of the queue flashes slowly indicating that this unit is the next to be switched 'On'.

The green 'Request' lamp in the other delegate unit in the queue illuminates steadily.

When one of the units speaking is switched 'Off', the first delegate unit in the queue is automatically switched 'On'.

This mode is normally be used with only 1 as the 'Max delegate speakers'. Chairman units are always turned on directly if the value set for 'Max Total Speakers' is not reached.

- VOX, voice activation mode allows for the Discussion Units to be switched on automatically when a delegate is speaking into the microphone or touching the 'Speak' button.

This is indicated by a red light in the 'Speak' lamp in the Discussion Unit. Touching the microphone 'Speak' button again turns the microphone off.

When a delegate stops speaking, the microphone turns off automatically after a short period. This period is controlled by the 'Release Time' setting (see section '5.6 Web Browser Setup and Control'). The default is 4 seconds.

The microphone can also be turned off by touching the 'Speak' button.

A Chairman Unit is always considered to be in Auto or VOX mode

5.7.2 Delegate Interrupt Mode

The "Delegate Interrupt" setting determines the behavior of the delegate Discussion Units.

If 'Off' is selected one delegate cannot interrupt another. If "On" is selected a delegate is allowed to interrupt (switch off) another delegate. Interrupt becomes relevant when 'Max Delegate Speakers' get exceeded.

When this occurs, the delegate who has been 'On' for the longest time is interrupted (switched off) to allow the interrupting delegate to speak.

6 DC 5980P Discussion Unit

6.1 Overview

The Discussion Unit offers the following features:

- Discussion unit can be configured as Delegate, Chairman or Interpretation Unit
- Touch button technology
- Lockable XLR microphone socket
- Two channel interpretation
- Cat5e daisy chain connection of units
- Loudspeaker
- Mute/All Del Off and Speak/Request buttons
- Channel selector with channel indication
- Headphone volume control
- Headphone connector

1. **Button panel** – The button panel contains the controls available on the unit.
2. **Headphone socket** – Connection of headphone DH 6021 or similar.
3. **XLR socket for microphone** – Used to connect a DIS gooseneck microphone to the unit. The GM 59xx gooseneck microphone can be locked to the unit with a 1.5 mm hex/Allen key. The lock is accessible from the small hole next to the XLR socket. Turn the hex key counter clockwise to lock the gooseneck microphone to the unit and turn the hex key clockwise to unlock the gooseneck microphone from the unit.

4. **Loudspeaker** – Built in loudspeaker. The loudspeaker is turned 'Off' when the microphone in the unit is active. The built in loudspeaker is always 'Off' when the unit is configured as an Interpreter Unit.
5. **DCS-LAN connection** – Two RJ45 sockets are located at the bottom of the unit for connecting to the previous unit or to the CU 5905 Central Unit and to the next unit. A plastic cable clamp can be ordered separately and can be used to secure the cables.

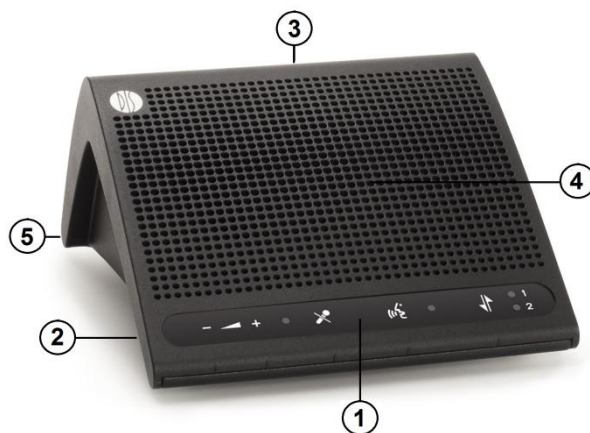


Figure 21. DC 5980P Discussion Unit

6.2 Preparing the Discussion Unit

The units must be configured before use. The following items need to be done:

- Attach buttons overlay
- Configure the unit to the required unit type.

6.2.1 Discussion Unit Overlays

The following overlays are available as standard:

6.2.1.1 Delegate, 'Speak' & 'Mute' Button



This overlay is packaged with the Discussion Unit and offers a 'Speak' button and a 'Mute' button for muting the microphone.

6.2.1.2 Delegate, 'Speak' Button



This overlay must be ordered separately and is NOT packaged with the Discussion Unit. This overlay is used when the 'Mute' of the microphone is not required.

One sample is packaged with the CU 5905.

Please refer to the 'Accessories' section.

6.2.1.3 Chairman



This overlay is used for Chairman Unit functionality.

Two chairman overlays are packaged with the CU 5905.

6.2.1.4 Interpreter



This overlay is to be used for Interpreter Unit functionality.

Three interpreter overlays are packaged with the CU 5905.

6.2.2 Other Languages, CM & IS

Language packages are available for Chairman and Interpreter overlays in other languages.

Please refer to the 'Accessories' section.

6.2.3 Attaching Overlays

Overlays are attached to the unit by removing the protective paper and placing the overlay in the overlay recess on the front of the unit.

The overlays are not designed to be removed from the unit after they have been attached.

A spare parts package with overlays is available. Please refer to the 'Accessories' section.

6.2.4 Configuration of the Unit

The unit comes configured as a Delegate Unit with 'Speak' and 'Mute' button.

Any unit can be re-configured either as a chairman, delegate (without 'Mute' button) or interpreter unit.

To change the unit type, press the '-' and '+' volume buttons simultaneously and keep them depressed for 3 seconds until the 'Speak' light starts flashing. Then use the channel button to toggle between unit types.

Changing Unit Type

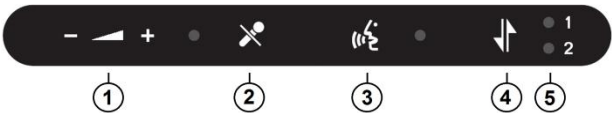
Unit Type	Ch. 1	Ch. 2
Delegate with mute	Off	Off
Delegate without mute	On	Off
Chairman	Off	On
Interpreter	On	On

When the buttons are released, the light in the buttons flashes to indicate that the unit is configured and the unit then reboots.

The unit type is stored in the unit. The unit recalls its type if/when it is used with another CU 5905.

6.3 Delegate Unit

When the unit is configured as Delegate Unit, the buttons have the following functionality:

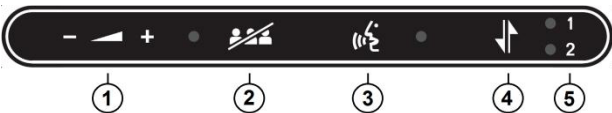


1. **Headphone volume control** – The '-' button decreases the audio level in the connected headphone and the '+' button increases the audio level.

- 2. **Mute button** – Touching the 'Mute' button mutes the audio from the microphone without switching off the unit as long as the button is activated. When muted, the red light ring on the microphone is turned off.
- 3. **Speak button** – Touching the 'Speak' button turns the microphone 'On' or sets the user into 'Request to Speak' depending on the 'System Operation Mode'. Please refer to section '5.7 Operation Modes'.
- 4. **Language selection** – Used to switch between 'Floor' language and 'Ch.1' and 'Ch.2', if Interpreter Units are connected.
- 5. **Language indication** – 'Ch.1' selection illuminates LED 1 and 'Ch.2' selection illuminates LED 2. When no LED is illuminated, the 'Floor' channel is selected.

6.4 Chairman Unit

When a unit is configured as a Chairman Unit, the buttons have the following functionality:

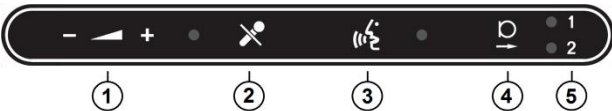


1. **Headphone volume control** – The '-' button decreases the audio level in the connected headphone and the '+' button increases the audio level.

- 2. **Del. Off button** – Touching the 'Del. Off' button turns off all delegate microphones.
- 3. **Speak button** – Touching the 'Speak' button turns the microphone 'On'.
- 4. **Language selection** – Switches between 'Floor' language and 'Ch.1' and 'Ch.2' if Interpreter Units are connected.
- 5. **Language indication** – 'Ch.1' selection illuminates LED 1 and 'Ch.2' selection illuminates LED 2. When no LED is illuminated, the 'Floor' channel is selected.

6.5 Interpreter Unit

When the unit is configured as Interpreter Unit, the buttons has the following functionality:



1. **Headphone volume control** – The '-' button decreases the audio level in the connected headphone and the '+' button increases the audio level. The audio in the headphone is always in the 'Floor' audio mode when the unit is configured as Interpreter Unit.

- 2. **Mute button** – Touching the 'Mute' button mutes the audio from the microphone without switching off the unit as long as the button is activated. When muted, the red light ring on the microphone is turned off.
- 3. **Speak button** – Touching the 'Speak' button turns the microphone 'On' and delivers audio to the selected interpreter channel. Any other interpreter unit occupying the same channel is turned off.
- 4. **Interpreter channel** – Used for switching the 'Out-going' interpreter channel between 'Ch.1' and 'Ch.2'. Audio from the microphone is send to the selected interpreter channel.
- 5. **Outgoing language indication** – 'Ch.1' selection illuminates LED 1 and 'Ch.2' selection illuminates LED 2.

7 GM 59xx Gooseneck Microphones

The series GM 59xx gooseneck microphones are available in two lengths: 40 cm and 50 cm. These microphones feature a red light ring, which lights up when audio from the unit is sent to the central unit.

The microphone is inserted in the XLR socket in the Discussion Unit and can be locked to the unit with a 1.5 mm hex/Allen key. The lock is accessible from the small hole close to the XLR socket. Turn the hex key counter clockwise to lock the gooseneck microphone to the unit. Turn the hex key clockwise to unlock the gooseneck microphone from the unit.

8 Troubleshooting

This section contains a simple troubleshooting guide.

It is intended to be used to troubleshoot problems due to incorrect installation. If more serious faults or problems arise, the installer should contact a qualified technician.

The light rings on the microphone are constantly flashing when installed in the units.	<ul style="list-style-type: none"> • Check the cables. Digital communication from the Central Unit to the Discussion Units has not been established • Ensure that all the connectors on all the cables are firmly inserted in the sockets on the units • Check that the feed cables from the Discussion Units are properly inserted into the 'DCS-LAN' socket on the CU 5905.
The 'Del. Off' button on the Chairman Unit does not switch off the Delegate Units	<ul style="list-style-type: none"> • Check to make sure the unit is configured as a Chairman Unit • Check to make sure the other units are configured as Chairman or Interpreter Units. Please refer to 'Configuration of the Unit' section.
The audio from an Interpreter Unit cannot be heard in the headphone of Delegate or Chairman Units	<ul style="list-style-type: none"> • Check to make sure the unit is configured as an Interpreter Unit. Please refer to 'Configuration of the Unit' section. • Check the headphone volume control on the units • Check the channel selection on the Discussion Units • Check that the headphone plug is firmly inserted in the headphone jack • 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
There is no audio coming from the built-in loudspeakers	<ul style="list-style-type: none"> • Check the 'Loudspeaker Volume' setting using either the interactive menu on the CU or using the browser control. • Check the setting 'CU 5905 Setup > Audio > Loudspeaker Control > Microphone -> Loudspeaker' is set to 'On', using the browser control. • Check the settings in 'CU 5905 > Audio > Audio Output > Group Setup' that the seats are selected in 'Group A', using the browser control. 'Group A' is always used as the source for the built-in loudspeakers. If a unit is not selected in 'Group A', the audio from the unit will not be heard in the built-in loudspeakers.
There is no audio from the built-in loudspeakers on one or more Delegate or Chairman Units	<ul style="list-style-type: none"> • Check in 'CU 5905 > Audio > Audio Output > Group Setup', using the browser control. Make sure the seat is selected in 'Group A'. 'Group A' is always used as the source for the built-in loudspeakers. If a unit is not selected in 'Group A', the audio from this unit will not be heard in the built-in loudspeakers.
A microphone cannot be turned 'On'	<ul style="list-style-type: none"> • Check the settings 'Max Delegate Speaker' and 'Max Total Speakers'. • Check the 'Operation Mode'.
The CU 5905 browser application will not open on a PC or iPad	<ul style="list-style-type: none"> • Using the interactive menu on the CU, check the IP address: 'LAN setup/IP address setup/IP address'. Use this IP address using the browser • Verify that the CU5905 and the PC are connected to the same network • Check the LAN cable connections
The CU 5905 browser application will not open on an iPad	<ul style="list-style-type: none"> • Check the IP address, using the interactive menu on the CU: 'LAN setup > IP address setup > IP address'. Use this IP address in the browser. • Verify that the iPad is connected to the proper wireless access point • Check that the CU 5905 is connected to the same network as the wireless access point

9 Firmware Update

9.1 Firmware Update

If a firmware update of the CU 5905 Central Unit is needed, it is done through the browser interface:

Type the 'IP address' or 'Host Name' followed by '/cgi-bin/update.cgi' in the browser as shown in the next picture. The CU 5905 Update window is displayed:



Figure 22. Browsing for Update File

The update file is located on the PC using the 'Browse' button. The update file has the format 'cu_5905_xxxxxx.dis'. If an update is available, the update file is delivered from your support source.

After selecting the update file, click the 'Go' button and the update process begins:

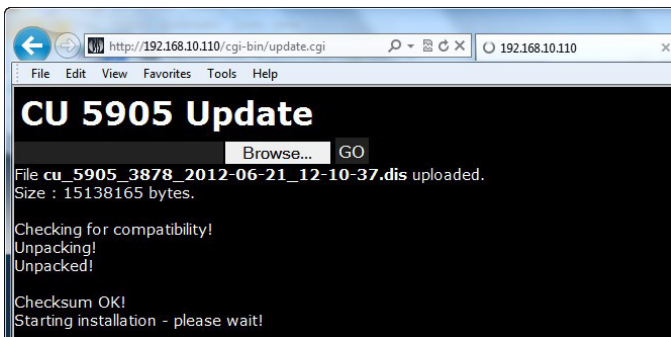


Figure 23. Update File is Uploaded

The update process may take several minutes. During the update process information is displayed. When the process is finished the word 'Success' is displayed:

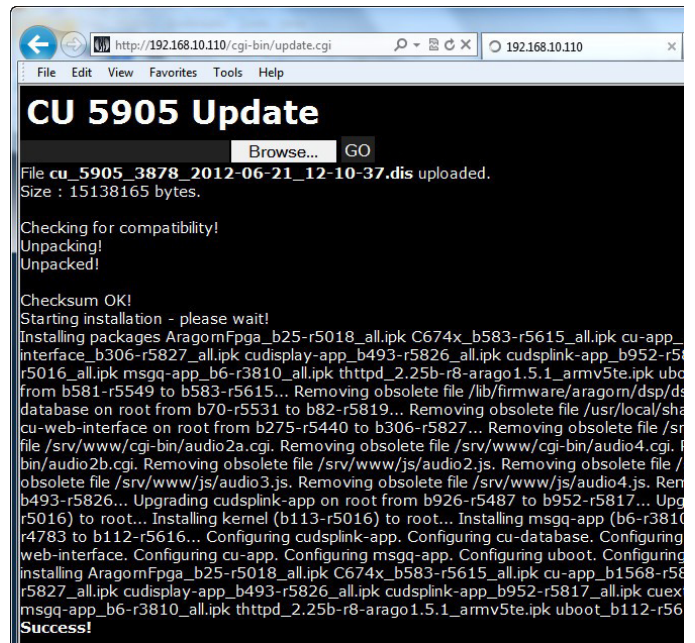


Figure 24. Update is Finalized

10 Technical Specifications

10.1 System Specifications

10.1.1 Overall System Characteristics

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

Audio performance specifications are measured from the audio input of a Discussion Unit to the headphone output of a Discussion Unit.

System Audio Performance

Audio quality	24 bit audio @ 32 kHz sampling frequency
Audio frequency response	65 Hz - 16 kHz (-3 dB)
Total harmonic distortion at 1 kHz	< 0.1%
Dynamic range	> 80 dB
Weighted signal-to-noise ratio	> 85 dB(A)

Cabling and System Limits

Cable type (min. specification)	Cat5e, AWG 24, screened
Maximum cable length in one chain	120 m

System Environmental Conditions

Working condition	Fixed, stationary or transportable
--------------------------	------------------------------------

Temperature Range

To guarantee specified performance	5 Deg C. to 40 Deg C.
Storage temperature	-20 Deg C. to 60 Deg C
Maximum relative humidity	< 80%

Approvals

EMC emission	According to harmonized standard EN 55103-1 and FCC rules part 15, complying with the limits for a class A digital devices
EMC immunity	According to harmonized standard EN 55103-2
EMC approvals	Affixed with the CE mark
ESD	According to harmonized standard EN 55103-2
Mains harmonics	According to harmonized standard EN 55103-1
Environmental requirements	Contains no banned substances as specified in UAT-0480/100 (e.g. no cadmium or asbestos)

Specifications are subject to change without notice

10.2 CU 5905 Specifications

Analog Section

Audio output signal type	electronically balanced
Nominal output level	0 dBm at nominal input
Max. output level	4.9V RMS ~ +16 dBm
Audio input signal type	electronically balanced
Nominal input level (In 1 is switchable)	0 dBm or -10 dBm (0.775V RMS or 0.245V RMS)
Max. input level	+15 dBm (4.5V RMS)
Analog Audio in	impedance 50-100 kΩ

Connectors

Chain – Discussion units (DCS-LAN)	2xRJ45
---	--------

Maximum total number of units to be connected to both outputs on a CU 5905:

DC 5980P Discussion Units	up to 60 pieces
Audio output	4 units XLR3 male connectors
Audio input	2 units XLR3 female connector
LAN (TCP/IP)	1 RJ45
EEM	1 contact closure input

General

Power consumption	max. 150W/48V
Supply voltage for DC 5980 units	125W/48V
Weight	2.8 kg (6.17 lbs.)
Dimensions (W x H x D) (Dimension in bracket is including 19" brackets)	427 (483) x 44.4 x 186 mm (16.8 x 1.75 x 7.2 in.)

System Performance

Max. number of discussion units	250
Max. number of interpreter units	32
Max. number of languages	2
Max number of open microphones	8

Accessories Supplied

- CU 5900 External Power Supply incl. main cable
- Terminal block for EEM connector
- 19" brackets for installing in 19" standard racks
- USB memory stick with 'User Manual'
- DC 5980P Button Overlays:
 - Chairman, Pictogram, 2 pieces
 - Interpreter, Pictogram, 3 pieces
 - Delegate – Speak, Pictogram, 1 piece
- Tool for fixing the GM 59xx Gooseneck Microphone

CU 5900 External Power Supply

Delivered power	max. 150W
Input current	max. 4A@115V AC or max. 2A@230V AC
In-rush current	max. 40A@115V or max. 20A@230V
Standby consumption	<0.5W
Main voltage	100 - 240V, 50 - 60Hz
Supply voltage for CU 5905	48V/3A
Efficiency	typical 87%
Weight	935 g
Dimensions (W x H x D)	180 x 52 x 99 mm (7.09 x 2.05 x 3.9 in.)
Approvals	CE, KC, CCC, UL, TÜV

Specifications are subject to change without notice

10.4 GM 59xx Gooseneck Microphones**General**

Transducer type	Condenser
Polar pattern	Cardioid
Frequency response	30 Hz - 18 kHz
Sensitivity	-52 +/- 3dB (0dB = 1V/1Pa, 1 kHz)
Maximum input sound level	110 dB SPL, 1 kHz at 3% THD
Signal-to-noise ratio	>60 dBA
Front/back ratio	>25 dB (1 kHz)
Dimension (GM 5923)	400 mm (15.75 in.)
Dimension (GM 5924)	500 mm (19.7 in.)
Microphone connector	XLR3 male

Specifications are subject to change without notice.

10.3 DC 5980P Discussion Unit**Digital Section**

Loudspeaker frequency range	150 Hz – 15 kHz
Loudspeaker maximum power	2.1W RMS

General

Power requirement	24-48 V DC
Power consumption (Power supplied from CU 5905 / EX 6010 / PS 6000)	1W to 3W
Weight	500 g (1.1 lbs.)
Dimensions (W x H x D)	128 x 71 x 146 mm (5.0 x 2.8 x 5.75 in.)
Color	Black

Connectors

DCS-LAN loop through	2 pieces RJ45
Headphone	3.5 mm Stereo Jack plug
XLR for GM 65xx or GM 59xx type	XLR3 female

Accessories supplied

- Button overlay, Pictogram, Delegate - Speak & Mute, 1 piece
- AC 5900 Cable Clamp, 1 piece

Specifications are subject to change without notice.

10.5 Connection Details

Main Power

Blue	Neutral
Brown	Live
Green/Yellow	Earth (Ground)

Chain (DCS-LAN)

The DDS 5900 system uses Cat5e, Cat6 or Cat7 F/UTP or U/FTP cables with screened 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
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 unscreened.

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 spec. as stated in Cat5e (EIA 568-B) has to be followed.

Cat6 and Cat7 cables are normally only be 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

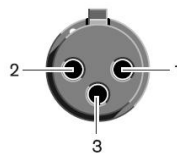
XLR3 male

Pin	Signal	Cable type
1	Earth	2 x 0.25 mm2 shielded.
2	Signal +	
3	Signal -	

Analog Audio In

XLR3 female

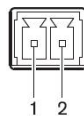
Pin	Signal	Cable type
1	Earth	2 x 0.25 mm2 shielded.
2	Signal +	
3	Signal -	



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



10.6 Accessories

Gooseneck Microphones

GM 5923 Gooseneck Microphone, 40 cm	18 12 05910
GM 5924 Gooseneck Microphone, 50 cm	18 12 05920
GM 6523 Gooseneck Microphone, 40 cm	18 12 05714
GM 6524 Gooseneck Microphone, 50 cm	18 12 05716
GM 6525 Gooseneck Microphone, 63 cm	18 12 05718
GM 6622 Shotgun Gooseneck Mic. 29.5 cm	18 12 05822

Cat5e Connection Cables (AWG24)

EC 6001-0.5 Connection Cable 0.5 m	10 03 22500
EC 6001-01 Connection Cable 1 m	10 03 23101
EC 6001-02 Connection Cable 2 m	10 03 23201
EC 6001-05 Connection Cable 5 m	10 03 23501
EC 6001-10 Connection Cable 10 m	10 03 24102
EC 6001-20 Connection Cable 20 m	10 03 24202
EC 6001-50 Connection Cable 50 m	10 03 24502

Cable Clamp

AC 5900 Cable Clamp, 100 pieces	15 12 61101
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The clamp prevents the cable getting stuck between the table and the bottom of the unit, if the unit is moved.

Transportation and Storage Box

SB 5980 Storage Box for 10 DC 5980P & GM	15 12 61001
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Headphones

DH 6021 Stereo headphones	14 11 03055
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Expansion Units

JB 6104 Junction Box with 4 outputs	15 09 05797
EX 6010 Extension Unit	15 09 05681
PS 6000 Power Supply	15 09 05756
RP 6004 Repeater/Splitter for 4 chains	15 09 05757

Button Overlay Package

DC 5980P Overlay Delegate	15 12 60905
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Delegate – Speak, Pictogram, 100 pieces

Spare Part Package

DC 5980P Spare Part Package	85 01 00101
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Contains the following:

- DC 5980P Button Overlays:
 - Chairman, Pictogram, 2 pieces
 - Interpreter, Pictogram, 3 pieces
 - Delegate – Speak, Pictogram, 1 piece
 - Delegate – Speak & Mute, Pictogram, 3 pieces
 - Tool for fixing the GM 59xx Gooseneck Microphone
- Rubber feet for CU 5905 (4 pieces)
- Tool for fixing the GM 59xx Gooseneck Microphone

11 External Control Protocol

The DDS 5900 Digital Discussion System features an Ethernet connection for the purpose of providing an interface to control and monitor the system. By setting up a simple (raw) TCP/IP socket connection to the CU 5905 Central Unit, control options are available.

This section describes the TCP/IP raw socket protocol for communicating with the DDS 5900 Discussion System. This protocol provides a short set of commands, enabling a third part control application to monitor and/or control system status of a DDS 5900 Discussion System.

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 DDS 5900 Browser interface and the CU 5905 interactive display, however some commands and settings available in the browser interface and on the CU 5905 interactive display are not available using the 'External Control Protocol'

Customer applications can include but are not limited to AMX® or Crestron® room control systems, PC or micro controller based applications, e.g., for button mimics and camera control applications.

11.1 General Protocol Behavior

11.1.1 TCP/IP socket connection

A TCP/IP socket connection to the CU 5905 must be established for the External Control protocol to become available. Configuration of the CU 5905 connection to the Ethernet must be defined from the CU interactive front plate control/Browser interface and an IP address for the CU 5905 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 CU 5905 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 CU via Putty®: If the CU 5905 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 CU 5905 a connection can be set up using a simple terminal program like Putty.

1. Download at 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 CU. Control is now possible.
6. Type 'help' to see a list of commands available.

11.1.2 Command Structure (from External Control to CU 5905)

To control the CU an External Control sends commands to CU 5905 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 CU 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 CU 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.

11.1.3 Command Structure (from CU 5905 to External Control)

Command lines out of the CU 5905 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 CU terminates command lines by including both <CR> and <LF>.

11.1.4 Seat Numbering

Discussion Units are identified by means of a seat numbers. Each Discussion Unit is assigned a seat number. This is done automatically for all discussion units, when they are connected to the CU 5905. The CU 5905 Browser interface is used to change seat numbering.

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

11.1.5 CU 5905 Reply to Commands

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

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

There can be several reasons for the CU 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'

11.1.6 Retrieving System Status

The CU supports streaming of status. When an External Control issues a 'mic_status' or 'audio_status' command, the CU 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 CU status.

11.2 Microphone Control

11.2.1 Commands from External Control to CU 5905

11.2.1.1 Turn on microphone

mic_on <seat no><CR>

Instruct the CU to turn on the microphone at seat_no.

If the CU 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 CU issues the 'mic_request_off' command.

11.2.1.2 Turn off microphone

mic_off <seat no><CR>

Instruct the CU to turn off the microphone at seat_no.

If the CU turns off the microphone, it issues a 'mic_off' command.

11.2.1.3 Turn off all the delegate microphones

mic_all_delegates_off<CR>

Instruct the CU to turn off all delegate microphones.

A Chairman is not turned off.

The CU responds to the command by issuing the 'mic_off' command for each microphone that is turned off.

11.2.1.4 Put a microphone in the request list

mic_request_on <seat no><CR>

Insert a microphone into the request list.

If the CU inserts the unit into the request list and it issues the 'mic_request_on' command.

11.2.1.5 Remove a microphone from the request list

mic_request_off <seat no><CR>

Remove a microphone from the request list.

If the CU removes the unit from the request list and it issues the 'mic_request_off' command.

11.2.1.6 Clear the request list

mic_all_requests_off<CR>

Clear the request list.

The CU responds by issuing the 'mic_request_off' command for each microphone that is removed from the request list.

11.2.1.7 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 CU issues the 'mic_off' command.

If a microphone is turned on, the CU issues the 'mic_on' command and the 'mic_request_off' command.

11.2.1.8 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 CU issues the 'max_total_speakers' command.

11.2.1.9 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 CU issues the 'max_speakers' command.

11.2.1.10 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 CU issues the 'max_requests' command.

11.2.1.11 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)

The CU issues the 'mic_mode' command.

11.2.1.12 Set the Interrupt Mode

mic_interrupt <mode><CR>

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

<mode> Can be "on" (microphones interrupt) or "off" (microphones do not interrupt)

The CU issues the 'mic_interrupt' command

11.2.1.13 Retrieve the Microphone Status

mic_status<CR>

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

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

```
seat_number (for all microphones in the system)
mic_mode
mic_interrupt
max_total_speakers
max_speakers
max_requests
mic_on (for all microphones on)
mic_request_on (for all microphones in request list)
mic_status_done
```

11.2.1.14 Help

help<CR>

help <command><CR>

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

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

11.2.2 Commands from CU 5905 to External Control

11.2.2.1 Microphone On

mic_on <seat no><CR>

A microphone is turned on.

11.2.2.2 Microphone Off

mic_off <seat no><CR>

A microphone is turned off.

11.2.2.3 Microphone into Request List

mic_request_on <seat no> <request position><CR>

A microphone is inserted into the request list.

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

11.2.2.4 Microphone out of Request List

mic_request_off <seat no><CR>

A microphone is removed from request list.

11.2.2.5 Max Total Speakers

max_total_speakers <max total speakers><CR>

Maximum number of speakers allowed to speak.

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

11.2.2.6 Max Delegate Speakers

max_speakers <max speakers><CR>

Maximum number of delegates allowed to speak.

<max speakers> "1" to "8"

11.2.2.7 Max Requests

max_requests <max requests><CR>

Maximum number of delegates allowed in the request list.

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

11.2.2.8 Operation Mode

mic_mode <mode><CR>

Provides system operation mode.

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

11.2.2.9 Interrupt Mode

mic_interrupt <mode><CR>

Ability for microphones to interrupt.

<mode> "on" (microphones interrupt) or "off" (microphones do not interrupt)

11.2.2.10 Seat State

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

Provides seat information.

This information is sent from the CU to an External Control, when the External Control requests microphone status (**mic_status**).

<seat number> The seat number identification of a Discussion Unit. An number from 1 to 65535.

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

<seat name> Name assigned to a Discussion Unit via the browser interface.

Example:

```
seat_state 12 active Sharon Hall
mic_mode auto
mic_interrupt off
max_total_speakers 4
max_speakers 3
max_requests 250
mic_status_done
```

This command informs about seat number 12, which is active and has the name Sharon Hall attached.

11.2.2.11 Microphone Status Complete

mic_status_done<CR>

Provides notification that complete system status has been sent.

11.2.2.12 Seat State

seat_state <seat number> <seat state><CR>

Provides seat state information.

This information is sent from the CU to an External Control, when the state of a seat changes – a seat becomes passive or active.

<seat number> The seat number identification of a discussion unit. An integer ranging from 1 to 65535.

< seat state > The current state of the seat. This can be "active" or "passive"

11.3 Audio Control

11.3.1 Commands from External Control to CU 5905

11.3.1.1 Set Loudspeaker Volume

loudspeaker_volume <volume><CR>

Sets the volume of the loudspeakers for all Discussion 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 CU responds to this command by issuing the **loudspeaker_volume** command.

11.3.1.2 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 CU responds to this command by issuing the **line_input_level_1** command.

11.3.1.3 Set Line Output Volume (A-D)

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' or 'D'.

<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 CU responds to this command by issuing the **line_output_volume** command.

11.3.1.4 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 CU responds to this command by issuing the **audio_path** command.

11.2.2.13 Command error

command_error <error text><CR>

The CU has received an unknown command.

<error text> is a text explaining the error.

Examples:

command_error unknown command<CR>

command_error syntax error<CR>

11.3.1.5 Request Audio Status

audio_status<CR>

Provides system audio status.

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

```
loudspeaker_volume
line_output_volume (for all outputs A-D)
audio_path (for all paths)
line_input_level
audio_status_done
```

11.3.2 Commands from CU 5905 to External Control

11.3.2.1 Loudspeaker Volume

loudspeaker_volume <volume><CR>

Indicates the volume of loudspeakers for all Discussion 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.

11.3.2.2 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.

11.3.2.3 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 are: 'A', 'B', 'C' or 'D'.

<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.

11.3.2.4 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.

11.3.2.5 Audio Status Complete

audio_status_done<CR>

This command terminates audio status streaming.



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