



Security Systems

en | Installation and User Instructions  
Wireless discussion system



## Important Safeguards

Before you install or operate the DCN Wireless digital congress network, you must read the Important Safety Instructions. The Important Safety Instructions are supplied together with the central control unit.

## Disclaimers

CobraNet is a trademark of Peak Audio – a division of Cirrus Logic, Inc. – in the United States and/or other countries.

## About this manual

### Function

The Installation and User Instructions gives the installers and the operators the necessary data to install, configure and operate a basic DCN Wireless Discussion System.

When you want to make a more advanced DCN Wireless Discussion System, you also need information from the DCN Next Generation Installation and User Instructions.

The product index (refer to appendix B) tells you where you can find more data about devices that can be connected to DCN Wireless.

### Digital version

The Installation and User Instructions is available as a digital file (Portable Document File, PDF).

When the PDF refers you to a location that contains more data, you can click the text to go there. The text contains hyperlinks.

### Admonitions and notes

The Installation and User Instructions uses admonitions and notes. The admonition gives the effect if you do not obey the instructions. These are the types:

- **Caution**  
If you do not obey the caution, you can cause damage to the equipment.
- **Warning**  
If you do not obey the warning, you can cause personal injury or death.

## Signs

The Installation and User Instructions shows each admonition with a sign. The sign shows the effect if you do not obey the instruction.



#### Admonition

General sign for cautions and warnings.



#### Admonition

Risk of electric shock.



#### Admonition

Risk of electro-static discharges (refer to the section 'Electro-static discharges').

The sign that is shown along with a note gives more data about the note itself.



#### Note

General sign for notes.



#### Note

Refer to another information source.

## Electro-static discharges

Electro-static discharges can damage electric components. You must take measures to prevent electro-static discharges when you touch PCBs (refer to figure 1).

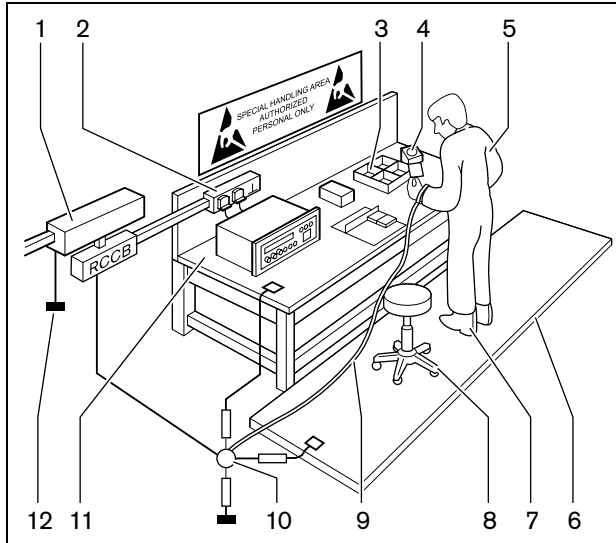


figure 1: ESD prevention

table 1: ESD prevention

No.	Description
1	Safety isolating transformer
2	Distribution supply box
3	Conductive compartment trays
4	Electro-static voltage sensor
5	Cotton overall
6	Conductive floor mat
7	Conductive boots/heel grounding protectors
8	Conductive stool
9	Strap (resistance 0.5 to 1.0 MΩ)
10	Common reference point
11	Conductive bench top
12	Supply ground

## Conversion tables

Length, mass and temperature are in SI units. Refer to the data below to change SI units to imperial units.

table 2: Conversion of units of length

1 in =	25.4 mm	1 mm =	0.03937 in
1 in =	2.54 cm	1 cm =	0.3937 in
1 ft =	0.3048 m	1 m =	3.281 ft
1 mi =	1.609 km	1 km =	0.622 mi

table 3: Conversion of units of mass

1 lb =	0.4536 kg	1 kg =	2.2046 lb
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table 4: Conversion of units of pressure

1 psi =	68.95 hPa	1 hPa =	0.0145 psi
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### Note

1 hPa = 1 mbar.

table 5: Conversion of units of temperature

$$^{\circ}F = \frac{9}{5} \cdot ^{\circ}C + 32$$

$$^{\circ}C = \frac{5}{9} \cdot (^{\circ}F - 32)$$

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## Section 1 - System Design and Planning

# 1 Wireless network design

## 1.1 Introduction

The DCN Wireless has three parts: the wireless network, the DCN and the optical network. This chapter tells how to design the wireless network.

## 1.2 Limits

### Limit 1: Control capacity

The maximum number of devices in the wireless network that the central control unit can control is 150.

### Limit 2: Coverage area

For a good operation of the wireless part, all wireless discussion units need to be in range of the wireless access point. The wireless access point has a typical maximum coverage area of 30 m by 30 m. To determine the exact coverage area the coverage test kit can be used.



#### Note

You can change the power value of the wireless access point (refer to section 11.6.4).

### Limit 3: Frequency

The wireless network must operate in a different frequency band than adjacent wireless (computer) networks (refer to section 1.3).

### Limit 4: Language Distribution enabled or disabled

If all wireless discussion units have software version 2.35 or higher, language distribution in the wireless network can either be enabled or disabled. This system setting will affect all units.



#### Note

Wireless discussion units that have a software version lower than 2.35 will only work when language distribution is disabled.

For information on how to enable or disable language distribution in the wireless network, refer to section 10.6.11.

Wireless discussion units that have software version 2.35 or higher have improved signaling and behavior with respect to subscription and connection, which is more in line with the wired DCN units (refer to section 14.6).

The difference in signaling can be used to detect the software version of the unit. This can be 2.35, or a higher or lower version.

If the wireless discussion unit has an integrated channel selector, the software version is shown on the channel selector display when:

- the unit is switched on but is not subscribed to a wireless network (refer to section 14.6 for information on subscription).
- the unit is in programming mode (refer to section 14.3.1).

For information on how to enable or disable language distribution in the wireless network, refer to section 10.6.11.

### Limit 5: Number of Language Distribution Channels

The wireless network has a maximum of 10 language distribution channels, excluding the channel for the floor. The total number of language distribution channels in the system, is set via the interpreter desk (refer to section 33.6.6.4 in the DCN Next Generation Installation & User Instructions).

If there are more than 10 Language Distribution Channels, only the first 10 channels will be available for the wireless network. All higher channels will only be available for the (wired) DCN network and/or the infrared Integrus network.

## 1.3 Frequency band

### 1.3.1 802.11g specification

The wireless network is based on the 802.11g specification for WiFi technology. Devices that comply to the 802.11g specification operate in frequency bands between 2.4000 and 2.4835 GHz.



#### Note

Although the system operates on frequencies which are license free world wide, you must be aware of country specific limitations and follow them.

### 1.3.2 Wireless computer networks

Wireless (computer) networks can also be based on the 802.11g specification for WiFi technology. In the wireless computer networks, 13 overlapping channels are available (refer to figure 1.1).

### 1.3.3 Carriers

In the wireless network of DCN Wireless, three non-overlapping wireless carriers are available (refer to figure 1.2).

### 1.3.4 Interference

The wireless network of DCN Wireless can cause interference on wireless computer networks. You must make sure the DCN wireless carrier does not overlap the WLAN channel.

Refer to figure 1.3. In the example, the WLAN channel is 3. WLAN channel 3 overlaps DCN wireless carriers 0 and 1. Therefore, use DCN wireless carrier 2.

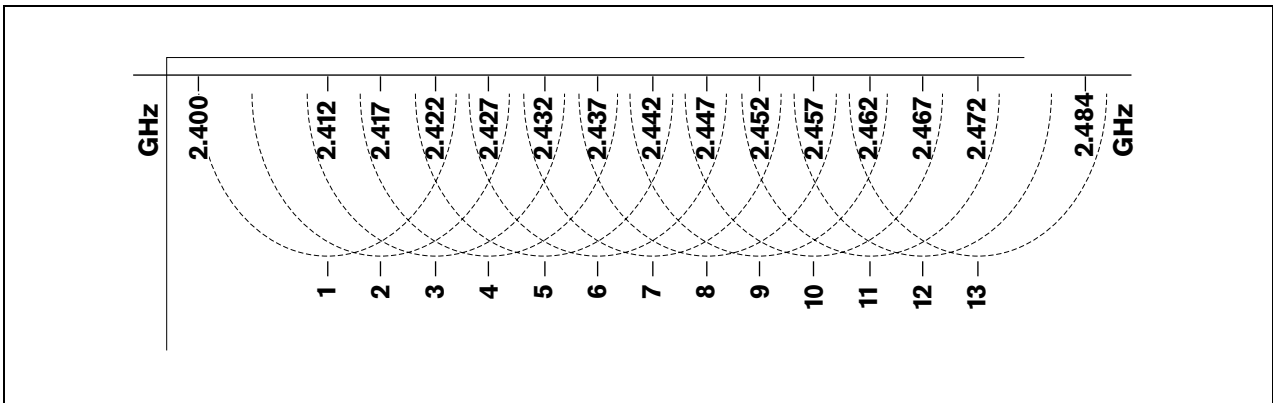


figure 1.1: WLAN channels

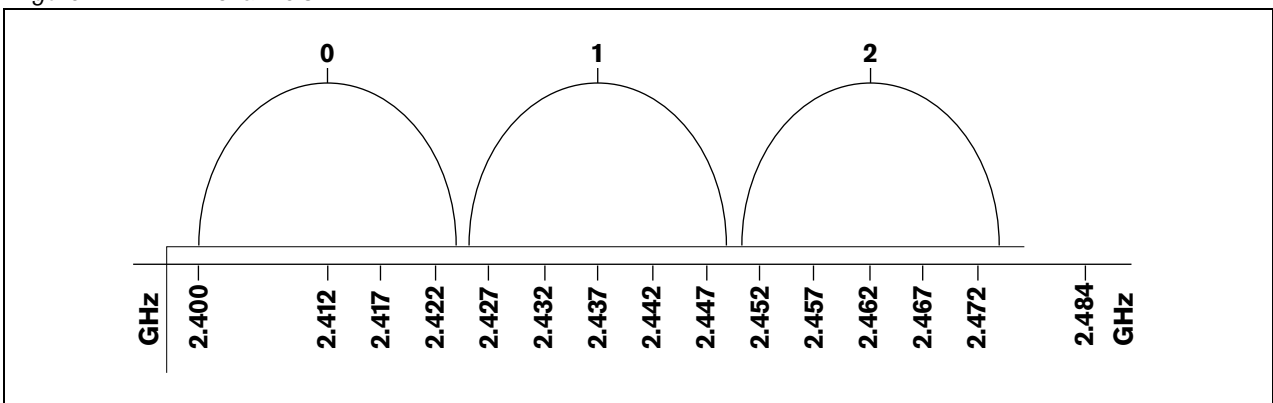


figure 1.2: DCN wireless carriers

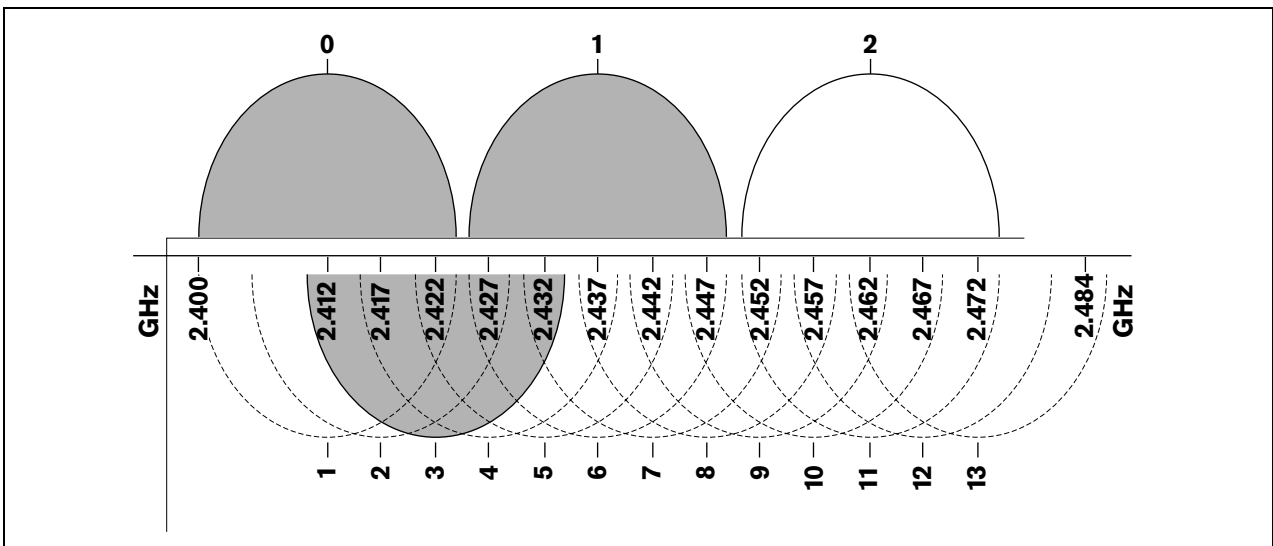


figure 1.3: Example of interference

## 2 DCN design

### 2.1 Introduction

The DCN Wireless has three parts: the wireless network, the DCN, and the optical network. This chapter tells how to design the DCN.

### 2.2 Limits

For the DCN limits, refer to chapter 1 in the “DCN Next Generation, Installation & User Instructions”. The DCN-WCCU has the same limitations with the following deviations.

Make sure the following limits are not exceeded when you design the DCN:

#### **Limit 1: Control capacity**

The DCN-WCCU wireless central control unit can control a maximum of 95 active wired devices. The number of passive devices is without limit. The following wired active devices can be connected in any combination:

- DCN-DIS Discussion Units
- DCN-CON Cententus Delegate Units
- DCN-DDI Dual Delegate Interface
- DCN-IDESK Interpreter Desks
- DCN-DDB Data Distribution Board
- DCN-FVU Voting Unit

The connected wired active devices have the same limitations as the wireless devices with respect to the number of audio channels (refer to section 12.4.1).

#### **Limit 2: Single CCU only**

The DCN-WCCU Wireless Central Control Unit cannot be used in a multi CCU system.

#### **Limit 3: Software Packages**

Only use the following software packages in combination with the DCN-WCCU Wireless Central Control Unit:

- LBB4162/00 Standalone Automatic Camera Control Software
- LBB4187/00 Open Interface Software
- DCN-SWSMV Synoptic Microphone & Voting Control Software

## 3 Optical network design

### 3.1 Introduction

The DCN Wireless has three parts: the wireless network, the DCN and the optical network. This chapter tells how to design the optical network.

### 3.2 Calculation tool

The calculation tool makes the planning and design of the optical network easier. You can find the calculation tool on the CD-ROM that is supplied with your system.

### 3.3 Limits

Make sure that these limits are not exceeded when you make the optical network:

#### Limit 1: Control capacity

The maximum number of nodes in the optical network is 63 (refer to section 3.4).

#### Limit 2: Number of devices

The maximum number of devices that you can connect to the optical network of the central control unit is 16. The maximum number of DCN-WAP Wireless Access Points in the optical network is 1.

#### Limit 3: Power capacity

The maximum power that the optical network sockets of the central control unit can supply is 65 W (refer to section 3.5).

#### Limit 4: Cables

Refer to section 3.6:

- The maximum length of a POF cable is 50 m.
- The maximum cable length (POF and GOF) of the optical network is dependent on the number of nodes in the optical network.
- The minimum bend radius of a 90 degree bend in a POF cable is 110 mm.
- The minimum coiling radius of a POF cable is 110 mm.

### 3.4 Control capacity

Each device in the optical network has a number of nodes (refer to table 3.1). The maximum number of nodes in the optical network is 63.

table 3.1: Nodes

Device	Nodes
DCN-CCU	2
DCN-WAP	1
LBB4402/00	1
LBB4404/00	1
LBB4410/00	1
LBB4414/10	0
INT-TX04	1
INT-TX08	2
INT-TX16	4
INT-TX32	8
PRS-4DEX4	1

### 3.5 Power capacity

#### 3.5.1 Introduction

Each device uses power and most devices do not have an independent power supply.

#### 3.5.2 Power consumption

The table shows the power each device in the optical network uses.

table 3.2: Power consumption

Device	Watt
DCN-WAP	4
LBB4402/00	7.6
LBB4404/00	10.5
LBB4410/00	3.9
LBB4414/10	4.6
PRS-4DEX4	6.0



#### Note

The Integrus transmitters do not use power from the system.



### 3.5.3 Power supply

The CCU supplies power for:

- the optical network, and
- the units connected via the DCN cables.

Refer to figure 3.1.

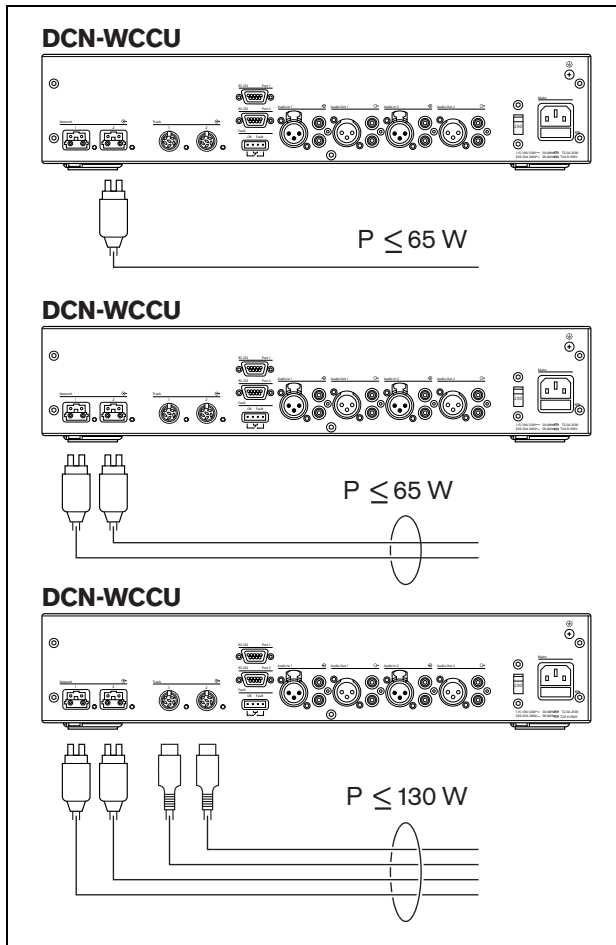


figure 3.1: Optical network power supply

If more power is necessary, you must install external power supplies in the optical network. The devices below can connect to external power supplies:

- LBB4410/00 Network Splitter (refer to the DCN Next Generation Installation and User Instructions).
- LBB4414/10 Fiber Interface (refer to the DCN Next Generation Installation and User Instruction).

### 3.5.4 Overload indication

Each optical network socket of the central control unit has a red LED that comes on to show that there is a power overload. An overload occurs when the necessary power for the devices is greater than that supplied. The sockets are deactivated and the devices connected to the central control unit do not operate. The socket checks every 8 seconds for power overloads.



#### Note

If only one of the optical network sockets has a power overload, the two overload LEDs come on.

## 3.6 Cabling

### 3.6.1 Introduction

Many devices in the optical network have two optical network sockets that are interchangeable. You can use the two optical network sockets to make a redundant ring.

### 3.6.2 Definitions

The optical network uses two types of cable:

- **POF**  
Plastic Optical Fiber.
- **GOF**  
Glass Optical Fiber.

### 3.6.3 Optical fiber length

Because of optical attenuation, the maximum length of optical network cables (LBB4416) is 50 m. You can use GOF and fiber interfaces to increase the distance between devices to a maximum of 1500 m.



#### Note

If the distance between two devices is less than 100 m, use a network splitter between devices to remove the use of fiber interfaces. Use only the trunk sockets of the network splitter in this case.

### 3.6.4 Cable couplers

You can use the LBB4419/00 Cable Couplers to connect optical network cables to each other. A cable coupler causes optical attenuation. Each cable coupler decreases the maximum distance between two devices in the optical network (normally 50 meters) with 20 meters.

### 3.6.5 Maximum cable length

The maximum cable length (LBB4416 and GOF) of the optical network is dependent on:

- The number of nodes
- The number of LBB4414/10 Fiber Interfaces

Do as follows:

- 1 Find the number of nodes of each device from the node value table (refer to table 3.1). Add together the nodes of all devices.
- 2 With the value of step 1, use the graph (refer to figure 3.2) to find the maximum cable length without LBB4414/10 Fiber Interfaces.
- 3 Count the number of LBB4414/10 Fiber Interfaces. Each fiber interface decreases the maximum cable length from step 2 with 18 m.

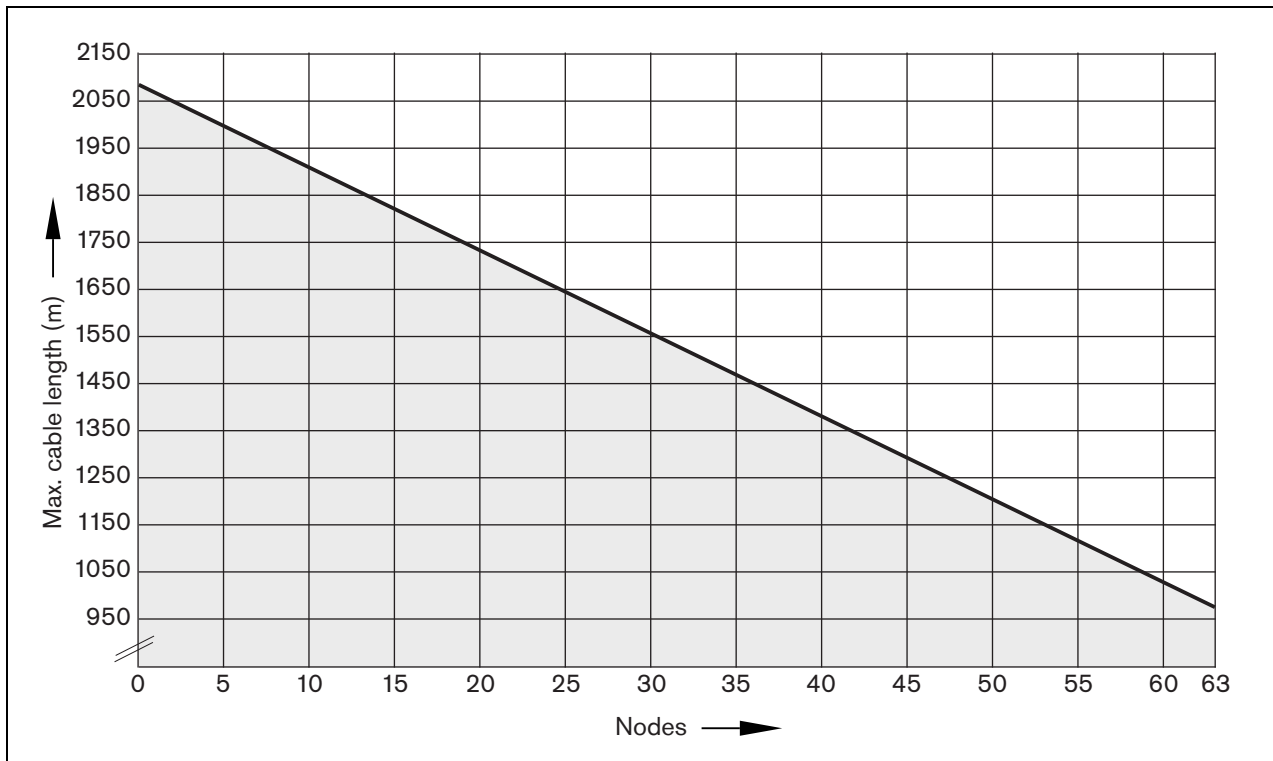


figure 3.2: Cable correction graph

### 3.6.6 Bending

The minimum bend radius of a 90 degree bend in an LBB4416 cable is 110 mm (refer to figure 3.3). A 180 degree bend is the same as two 90 degree bends.

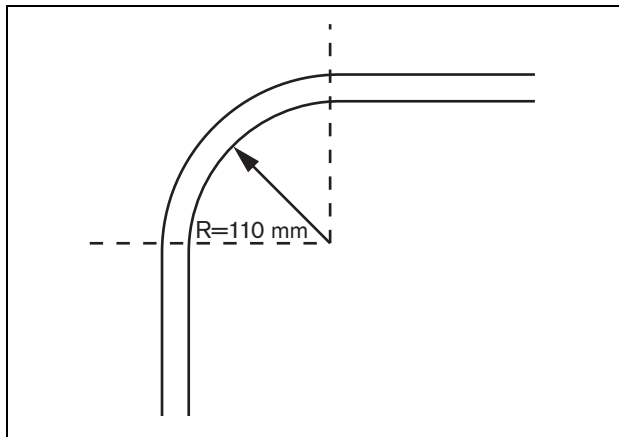


figure 3.3: Bend radius

### 3.6.7 Coiling

The minimum coiling radius of an LBB4416 cable is 110 mm (refer to figure 3.4).

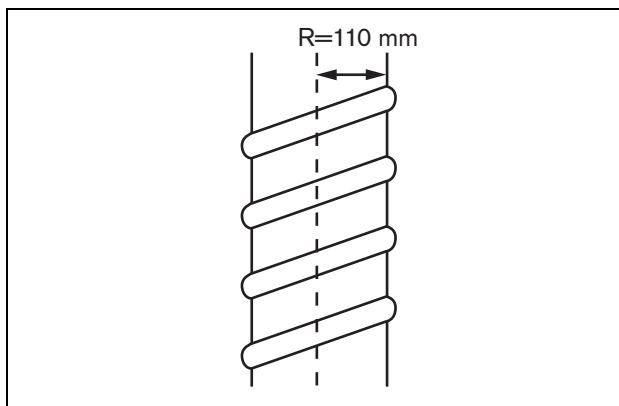


figure 3.4: Coiling radius

## 3.7 Example layouts

### 3.7.1 Introduction

The number and type of devices that make the optical network give the layout of the optical network. This chapter shows examples of the possible layouts of optical networks.

### 3.7.2 Basic optical network

Refer to figure 3.5 for an example of a basic optical network.

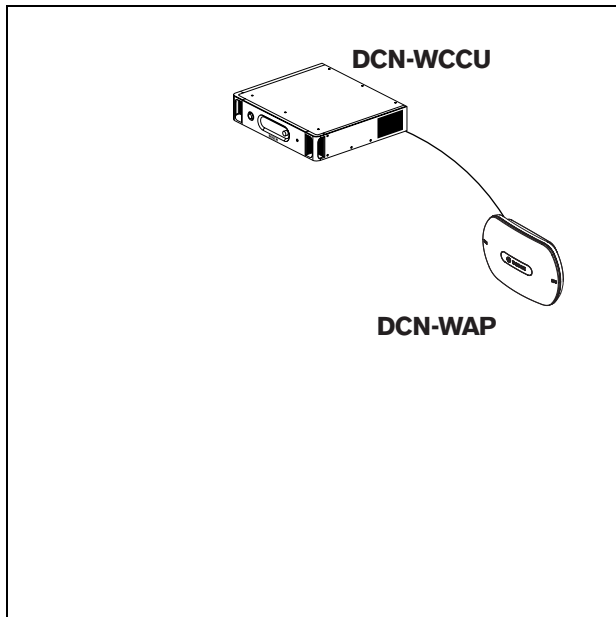


figure 3.5: Basic optical network

### 3.7.3 Extended optical network

Refer to figure 3.6 for an example of an extended optical network.

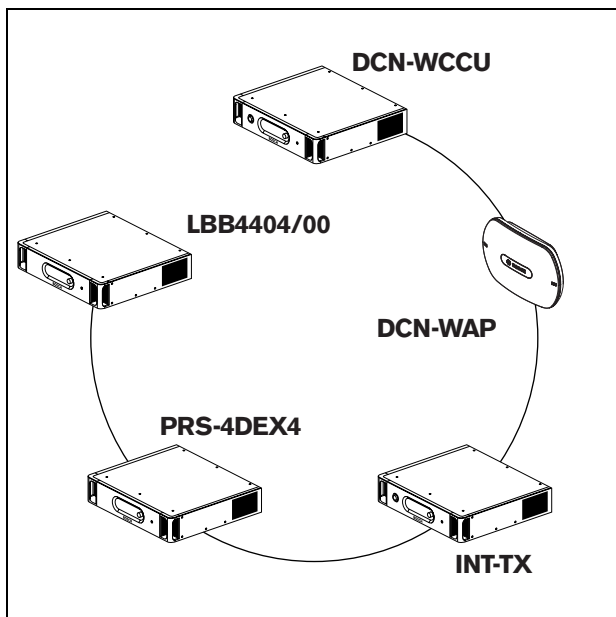


figure 3.6: Extended optical network

### 3.7.4 Redundant cables

The example of the extended optical network (refer to figure 3.6) has no redundant cable. If the cable between the central control unit (DCN-WCCU) and the wireless access point (DCN-WAP) breaks, the central control unit cannot transmit data to the wireless access point. A solution for this problem is to use redundant cable (refer to figure 3.7 for an example).

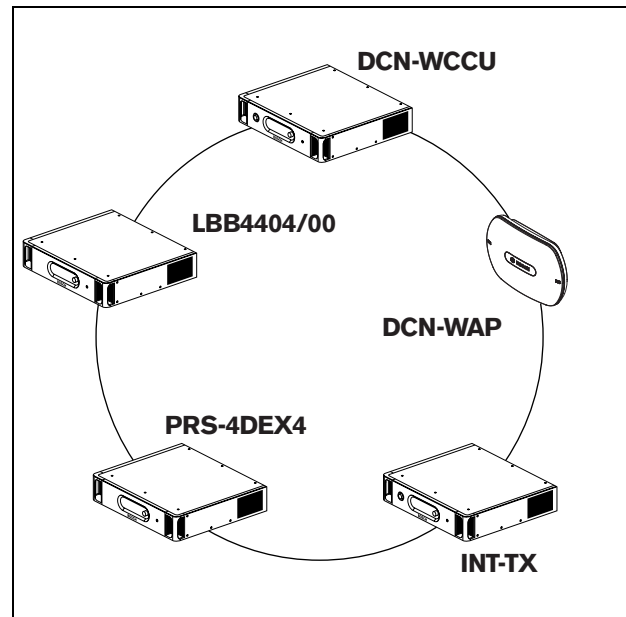


figure 3.7: Redundant optical network

The example of the system without redundant cable (refer to figure 3.6) has no connection between the cobranet interface (LBB4404/00) and the central control unit (DCN-WCCU). The example of the system with redundant cable has a connection between the Cobranet Interface and the central control unit. This connection makes a ring. If a cable breaks, the optical network continues to operate.

The total power of all devices in the redundant optical network is 65 W. If the optical network is defective near the central control unit, the other socket can supply power to all of the optical network.

### 3.7.5 Tap-offs

The network splitter (LBB4410/00) lets you make tap-offs (refer to figure 3.8 for an example). Tap-offs cannot be redundant. If the cable between the network splitter and the digital audio expander (PRS-4DEX4) becomes defective, the digital audio expander has no connection to the central control unit.

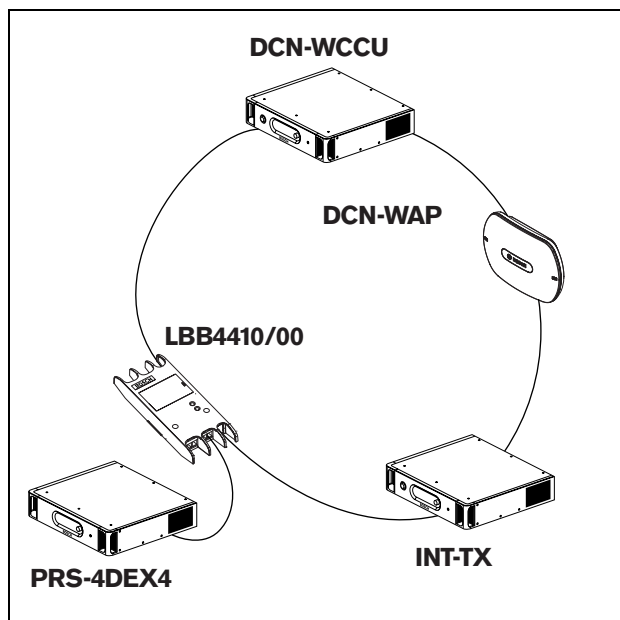


figure 3.8: Redundant optical network with tap-off

## 4 Camera control

### 4.1 Introduction

The central control unit can automatically point video cameras in the direction of the delegate or chairman who speaks. You can connect video cameras to the central control unit through a video switcher or directly to the central control unit. Use a video switcher to connect more than one video camera and video display to the central control unit.

### 4.2 Scenarios

These scenarios are possible:

- Direct camera control in a system without a DCN control PC. Refer to the DCN Next Generation Installation and User Instructions.
- Camera control through a video switcher in a system without a DCN control PC. Refer to the DCN Next Generation Installation and User Instructions.

## 5 Infra-red wireless language distribution

You can connect the system to an Integrus digital infra-red language distribution system. This system has a transmitter, radiators and receivers.



#### Note

Refer to the Integrus Installation and User Instructions for more data.



figure 5.1: Integrus

## 6 CobraNet

CobraNet is a standard for the transport of real-time digital audio and control data through an Ethernet network. A CobraNet network can transport a maximum of 64 channels of 48 kHz, 20-bit audio through a 100 Mbit link connection in each direction. Many manufacturers of professional audio devices support the CobraNet standard.

The DCN Wireless digital congress network can connect to CobraNet networks with the LBB4404/00 Cobranet Interface. For example, you can use the LBB4404/00 Cobranet Interface to:

- Benefit from Ethernet infrastructure
- Transport audio signals over large distances

**Note**

Refer to the DCN Next Generation Installation and User Instructions for the LBB4404/00 Cobranet Interface.

PC data, for example data from the DCN Wireless Central Control Unit can co-exist with CobraNet data on the same Ethernet network when you use managed Ethernet switches that are approved by Peak Audio.

**Note**

Refer to the website of Peak Audio ([www.peakaudio.com](http://www.peakaudio.com)) for:

- More data about CobraNet networks.
- A list of approved Ethernet switches.

## 7 User set-up

### 7.1 Public areas and walkways

Keep public areas clear of system and extension cables and connections.

### 7.2 Headphones/headsets

Connect headphones or headsets to:

- the Wireless discussion units.
- the Interpreter desks.
- the Channel selector.
- the Integrus receivers.

Acoustic feedback between the connected headphones or headsets and the microphone occurs when:

- The volume level is set too high.
- The headphones are too close to the activated microphones (refer to section 8.7).

### 7.3 Speaking distance

The recommended speaking distance from the microphone is 0.2 m to 0.4 m.

### 7.4 Interpreter booths

Make sure each interpreter booth has sufficient dimensions. The International Organization for Standardization (ISO) gives the specification for interpreter booths. Refer to standard ISO 2603 'Booths for simultaneous interpretation - General characteristics and equipment' for more data.

## 8 Device set-up

### 8.1 General

**Caution**

Do not put objects on top of devices. Objects can fall through the airflow holes. A blockage of the airflow holes can cause a risk of fire.

**Caution**

Do not put the devices near or above a radiator, heat grill or in direct sunlight.

**Caution**

Do not cause vibration of the devices.

- Make sure that the area is clean.
- Make sure that the air is sufficiently cool.
- Make sure that there is sufficient lighting.

### 8.2 Cables

Use different cable ducts for the extension and mains cables. Identify each cable with a label and divide trunks to manageable geographic locations. In public areas where people can touch or move above the connectors and cables, use metal protection covers. Refer to the applicable protection specification of the protection covers.

### 8.3 Temperature

When devices are in a 19-inch rack, make sure there is rack space between the devices to let sufficient air flow. Forced airflow may be necessary to keep the temperature of the devices below the maximum temperature (refer to section 9.2). This extends the lifetime of the devices.

### 8.4 Ventilation

Keep a good airflow. Airflow holes are in the front, right and left sides of all 19-inch devices (for example, the central control unit and the audio expander).

- Put the devices on a hard and level surface.
- Put the central control unit at minimum distance of 0.10 m from walls to let sufficient air flow.

### 8.5 Cleaning

**Caution**

Do not use alcohol, ammonia or petroleum solvents or abrasive cleaners to clean the devices.

- 1 Disconnect the mains power supply from the devices, if you want to clean the devices.
- 2 Use a soft cloth that is not fully moist with a weak soap and water solution.
- 3 Let the device fully dry before you operate the device again.

### 8.6 Storage

**Note**

If the central control unit is stopped or disconnected from the mains power supply for more than 100 days, the values of all system parameter are erased. This includes all the values of the parameters of the interpreter desks and the wireless access point. This does not include the subscription list.

- 1 Disconnect the mains power supply from the devices, if you do not use the devices for a long time.
- 2 Keep the devices in a clean and dry area with a sufficient airflow.
- 3 Remove the batteries of the wireless discussion units.



## 8.7 Acoustic feedback

Acoustic feedback ('howling') occurs when the sound of the loudspeakers or headphones in the system is sent to the system again by activated microphones.

*table 8.1: Acoustic feedback*

Source	Quick solution	Structural solution
The acoustic feedback is caused by the loudspeakers of the contribution devices.	Decrease the volume level of the system. For example, with the knob on the front of the central control unit (refer to section 10.6.3).	Do as follows: <ol style="list-style-type: none"> <li>1 Install a feedback suppressor between audio input 2 and audio output 2 of the central control unit.</li> <li>2 Set the audio routing mode of the system to Insertion (refer to section 12.6).</li> </ol>
The acoustic feedback is caused by an external public address system that is connected to the DCN Wireless digital congress network.	Decrease the volume level of the public address system or the DCN Wireless digital congress network.	Install a feedback suppressor between audio output 1 and the input of the external public address system.
The acoustic feedback is caused by the headphones that are connected to the contribution devices.	Tell the chairmen and the delegates to decrease the volume level of their headphones with their contribution devices.	Install and configure the headphones level reduction of the contribution devices. (Refer to the section about the contribution devices.)

## 9 Technical data

### 9.1 System electrical and electro-acoustic characteristics

#### 9.1.1 General

table 9.1: Electro-acoustic characteristics

<b>Nominal input level:</b>
85 dB SPL
<b>Maximum input level:</b>
110 dB SPL
<b>Automatic gain reduction (not for PA-floor output):</b>
<ul style="list-style-type: none"> <li>• 24 dB (interpretation channels)</li> <li>• 12 dB (delegate loudspeaker channel)</li> </ul>
<b>Automatic gain reduction with:</b>
<ul style="list-style-type: none"> <li>• 3 dB (2 microphones on)</li> <li>• 6 dB (4 or more microphones on)</li> </ul>
<b>Loudspeaker volume control:</b>
24 steps of 1 dB and off (mute)

#### 9.1.2 Routing links

- From delegate microphone to interpreter headphones
- From delegate microphone to delegate headphones
- From interpreter microphone to delegate headphones
- From interpreter microphone to interpreter headphones
- From auxiliary input to delegate headphones
- From auxiliary input to interpreter headphones
- From delegate microphone to auxiliary output
- From interpreter microphone to auxiliary output

table 9.2: Transmission links

<b>Frequency response:</b>
<ul style="list-style-type: none"> <li>• 125 Hz to 20 kHz (General)</li> <li>• 125 Hz to 3.5 kHz (Intercom links)</li> </ul>
<b>Harmonic distortion:</b>
< 0.5%
<b>Harmonic distortion @ overload:</b>
< 1%
<b>Crosstalk attenuation @ 4 kHz:</b>
> 80 dB
<b>Dynamic range:</b>
> 90 dB

### 9.1.3 Combined devices from input to output

- Delegate microphone with transmission link to interpreter headphones
- Delegate microphone with transmission link to delegate headphones
- Delegate microphone with transmission link to auxiliary output
- Interpreter microphone with transmission link to interpreter headphones
- Interpreter microphone with transmission link to delegate headphones
- Interpreter microphone with transmission link to auxiliary output

table 9.3: Combined devices from input to output

<b>Typical frequency response:</b>
125 Hz to 20 kHz
<b>Front-to-random sensitivity index:</b>
> 4.6 dB
<b>Rated equivalent sound pressure level due to inherent noise:</b>
< 25 dB(A)
<b>Total harmonic distortion @ overload:</b>
< 1%
<b>Crosstalk attenuation:</b>
> 80 dB

## 9.2 Environmental conditions

table 9.4: Environmental conditions

<b>Working conditions:</b>
Fixed, stationary, transportable
<b>Temperature range:</b>
<ul style="list-style-type: none"> <li>• -20 to +70 °C (transport)</li> <li>• +5 to +45 °C (operation)</li> <li>• For EPS and contribution devices with an LCD, the maximum temperature is +40 °C.</li> </ul>
<b>Relative humidity:</b>
< 95%

## 9.3 Safety

According Low-Voltage Directive (LVD) 2006/95/EC.

- For European countries: according EN60065.  
Marking: CE
- For international countries: IEC 60065 according CB-Scheme.
- For North America:
  - USA: ANSI/UL 60065
  - Canada: CAN/CSA no. 60065
  - Marking c-CSA-us.

## 9.4 Electro-magnetic compatibility

table 9.5: Electromagnetic compatibility

<b>EMC compatibility:</b>
According EMC Directive 2004/108/EC
European approvals: CE marking
EMC environment: for commercial or professional use
<b>EMC emission:</b>
According harmonized standard EN 55103-1 (E3) (prof. audio/video equipment)
According FCC rules (FCC part 15) complying to limits for class A digital devices
<b>EMC immunity:</b>
According harmonized standard EN 55103-2 (E3) (prof. audio/video equipment)

## 9.5 Wireless devices

table 9.6: Wireless devices

<b>Frequency</b>			
2400 - 2483.5 MHz			
<b>Max. transmitting power:</b>			
100 mW e.i.r.p.			
<b>Bandwidth:</b>			
22 MHz			
<b>Leading listed and certified country approvals:</b>			
Europe	CE Standard	Telecom EMC	EN 300 328 EN 301 489-1 EN 301 489-17 EN 60950-1
USA	Standard	Safety Telecom, EMC	FCC part 15.247 ANSI / UL 60950-1
Canada	Standard	Telecom, EMC	RSS 210
Japan	Standard	Safety Telecom, EMC	CSA 22.2 no. 60950-1 Ordinance regulating radio equipment: Item 19 Article 2

## 9.6 Miscellaneous

table 9.7: Miscellaneous

<p><b>Basic standard ESD:</b></p> <p>According EN 61000-4-2. Contact discharge: 4 kV and air discharge: 8 kV</p>
<p><b>Basic standard mains harmonics and voltage fluctuations, flicker:</b></p> <p>According EN 61000-3-2 and EN 61000-3-3</p>
<p><b>Basic standard RF electromagnetic fields:</b></p> <p>According EN 61000-4-3 RF conducted: 150 kHz - 80 MHz: 3 Vrms RF radiated 80 - 1000 MHz: 3 V/m Cellular telephone (GSM) dummy test: at 20 cm speech distance Criteria: not effecting normal operation.</p>
<p><b>Magnetic immunity:</b></p> <p>Rack mounting: 50 Hz - 10 kHz: 4 - 0.4 A/m No rack mounting: 50 Hz - 10 kHz: 3 - 0.03 A/m</p>
<p><b>Basic standard low energy electrical fast transients, bursts:</b></p> <p>According EN 61000-4-4 Mains: fast transients: 1 kV; signal and control data lines: 0.5 kV</p>
<p><b>Basic standard high energy surges:</b></p> <p>According EN 61000-4-5 Mains: surges: 1 kV CM and 0.5 kV DM.</p>
<p><b>Basic standard voltage dips, short interruptions, variations:</b></p> <p>According EN 61000-4-11 Mains: voltage dips 100% for 1 period, 60% for 5 periods, &gt; 95% for 5 seconds.</p>

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## Section 2 - Central Devices

## 10 DCN-WCCU Wireless Central Control Unit

### 10.1 Introduction

The DCN-WCCU Wireless Central Control Unit controls the system. The central control unit can operate with or without a control PC.



#### Note

The DCN-WCCU-UL is the CSA/UL approved version of the DCN-WCCU.

## 10.2 Controls, connectors and indicators

### 10.2.1 Front view

The front of the central control unit (refer to figure 10.1) contains:

- 1 **On/off switch** - Starts and stops the central control unit.
- 2 **Display** - Shows the configuration menu (refer to 10.6).
- 3 **Knob** - Operates the configuration menu (refer to 10.6). You can also change the volume level of the system with the knob.
- 4 **Headphones socket** - Connects headphones to the central control unit (refer to 10.5.4).

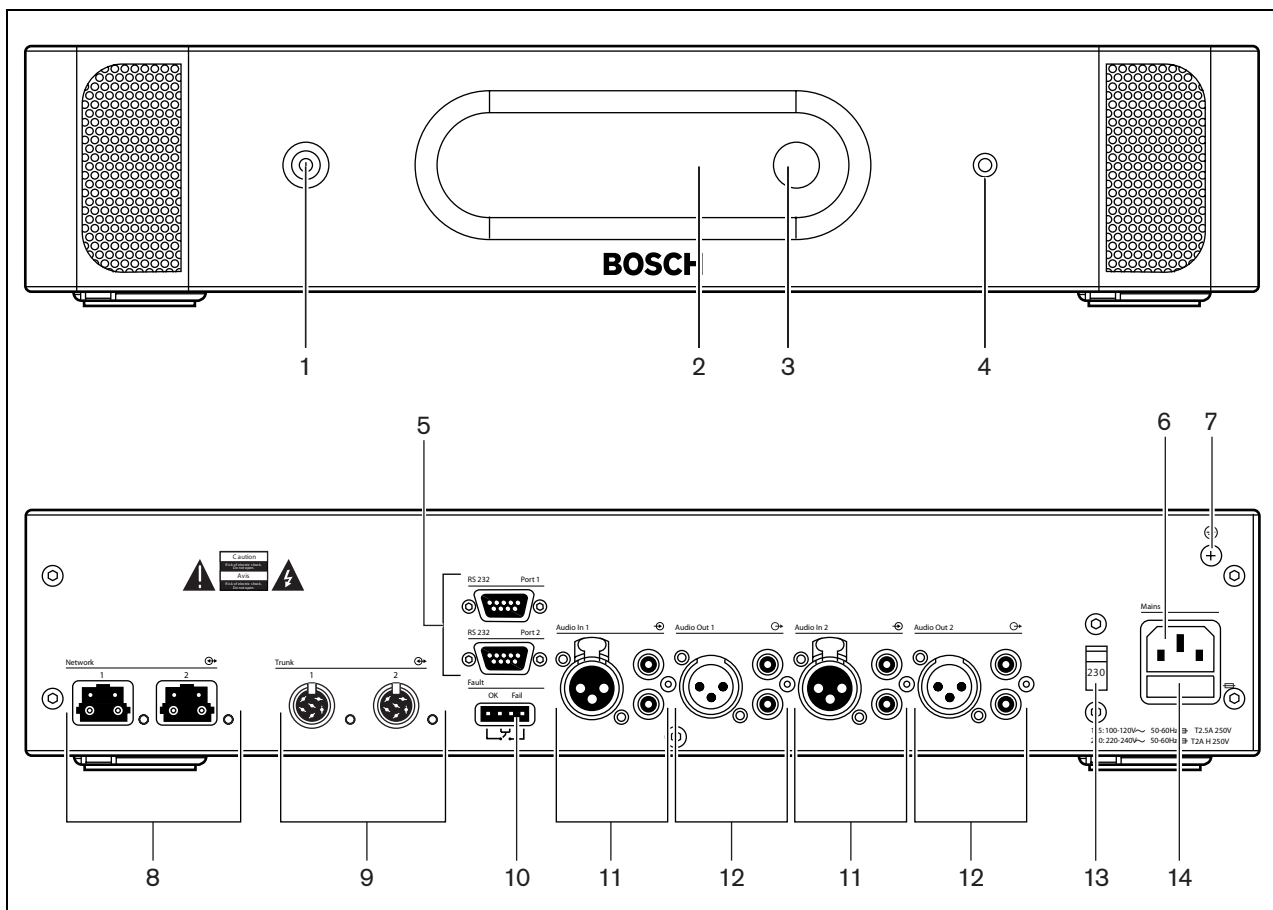


figure 10.1: Front and rear views



## 10.2.2 Rear view

The rear of the central control unit (refer to figure 10.1) contains:

- 5 **RS232 ports** - Connects a PC, remote controllers or video cameras to the central control unit (refer to 10.5.8).
- 6 **Power inlet** - Connects the central control unit to the mains power supply with a power cable (refer to 10.5.1).
- 7 **Ground screw** - Connects the central control unit to ground.
- 8 **Optical network sockets** - Connects the central control unit to the optical network (refer to 10.5.3).
- 9 **DCN sockets** - Connect the central control unit to the DCN (refer to 10.5.2).
- 10 **Fault contact** - Connects the central control unit to devices to sense the condition of the central control unit (refer to 10.5.7).
- 11 **Audio inputs** - Connect the central control unit to external analog audio sources (refer to 10.5.5).
- 12 **Audio outputs** - Connect the central control unit to external analog audio devices (refer to 10.5.6).
- 13 **Voltage selector** - Selects the voltage on which the central control unit must operate (refer to 10.5.1).
- 14 **Fuse holder** - Prevents damage to the internal power supply unit of the central control unit (refer to 10.5.1).

## 10.3 Internal settings

### 10.3.1 Overview



#### Warning

Before you open the central control unit, disconnect it from the mains power supply. Electrical discharges from the mains power supply can kill you.



#### Caution

Before you open the central control unit, take measures to prevent electro-static discharges.

The PCBs of the central control unit (refer to figure 10.2) contain:

- 15 **Software LEDs** - Show the condition of the software of the central control unit. When the software runs correctly, the yellow and green LEDs flash.
- 16 **S600 switches** - Reserved (refer to 10.3.2).
- 17 **X605 jumper block** - Enables or disables the watchdog (refer to 10.3.5).
- 18 **Reset switch** - Starts the central control unit again.
- 19 **Optical network processor indicator** - Comes on when the optical network processor operates correctly.
- 20 **S500 switches** - Configure the RS232 ports of the central control unit (refer to 10.3.3).
- 21 **X600 jumper block** - Connects and disconnects the internal back-up battery of the central control unit (refer to 10.3.4).
- 22 **X104 jumper block** - Connects and disconnects the mechanical ground and the electrical ground (refer to 10.3.6).
- 23 **Fuse** - Prevents damage to the electronic components in the central control unit.

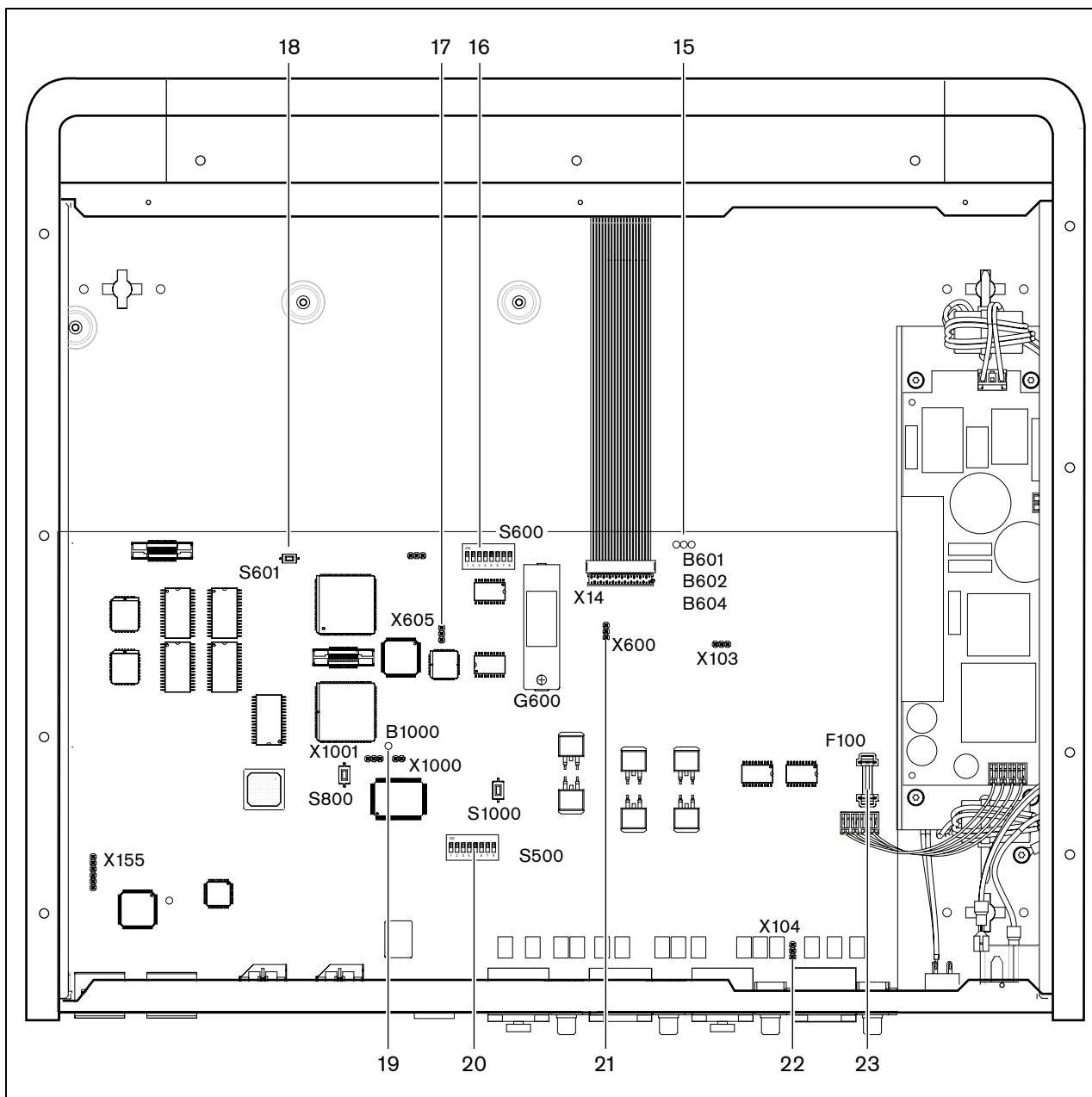


figure 10.2: Internal settings

### 10.3.2 S600 switches

table 10.1: S600 switches (\* = default)

Switch	Position	Description
S600-1	ON* OFF	Reserved. Do not change the position of this switch.
S600-2	ON OFF*	Reserved. Do not change the position of this switch.
S600-3	ON OFF*	Reserved. Do not change the position of this switch.
S600-4	ON OFF*	Reserved. Do not change the position of this switch.
S600-5	ON OFF*	Reserved. Do not change the position of this switch.
S600-6	ON OFF*	Reserved. Do not change the position of this switch.
S600-7	ON OFF*	Reserved. Do not change the position of this switch.
S600-8	ON OFF*	Boot mode. Enables the download of new firmware (in case a download failed). Normal operation.

### 10.3.3 RS232 configuration

Use the S500 switches to configure the RS232 ports of the central control unit (refer to table 10.2 and table 10.3).

table 10.2: RS232 protocol (\* = default)

Protocol	Port 1		Port 2	
	S500-1	S500-2	S500-5	S500-6
Open interface	Off	Off	Off	Off
Terminal	Off	On	Off	On
Full	On*	Off*	On	Off
Camera control	On	On	On*	On*

table 10.3: RS232 baudrate (\* = default)

Baudrate	Port 1		Port 2	
	S500-3	S500-4	S500-7	S500-8
9.6k	Off	Off	Off	Off
19.2k	Off	On	Off*	On*
57.6k	On	Off	On	Off
115.2k	On*	On*	On	On

### 10.3.4 Internal back-up battery

Use the X600 jumper block to connect and disconnect the internal back-up battery of the central control unit (refer to table 10.4).



#### Note

When your central control unit is new, you must energize the central control unit to charge the internal back-up battery. The internal back-up battery is fully charged after 24 hours.

table 10.4: X600 jumper block (\* = default)

Jumper shunt	Description
1 and 2 *	Connects the internal back-up battery. When you stop the central control unit, the memory of the central control unit is not erased.
2 and 3	Disconnects the internal back-up battery. When you stop the central control unit, the memory of the central control unit is immediately erased. The memory of the central control unit contains: <ul style="list-style-type: none"> <li>• The license code</li> <li>• The settings of the interpreter desks.</li> </ul>



#### Note

You only have a license code when you use the system in combination with:

- The PC Control Software
- A remote controller



#### Note

The subscription list is not erased when the internal back-up battery is empty. The subscription list is stored in another location.

### 10.3.5 Watchdog

Use the X605 jumper to enable or disable the watchdog of the central control unit (refer to table 10.5).

table 10.5: X605 jumper block (\* = default)

Jumper shunt	Description
Present	The watchdog is disabled. The central control unit does not start again after an error.
Not present*	Enables the watchdog. The central control unit starts again after an error.



#### Note

When you disable the watchdog, the system can operate incorrectly.

### 10.3.6 Ground

Use the X104 jumper block to connect and disconnect the system ground and the ground of the central control unit (refer to table 10.6). For example, you can connect the system ground and the ground of the central control unit to prevent hum.

table 10.6: X104 jumper block (\* = default)

Jumper shunt	Description
1 and 2	Connects the system ground and the ground of the central control unit.
2 and 3 *	Disconnects the system ground and the ground of the central control unit.



#### Note

When you connect the system ground to the ground of more than one device in the system, you can create ground loops. Ground loops can cause hum.

## 10.4 Installation

Install the central control unit in a 19-inch rack system or on a flat surface. Four feet and two brackets are supplied with the central control unit (refer to figure 10.3).

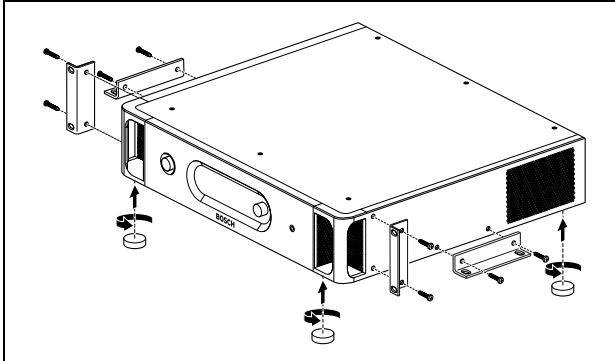


figure 10.3: Installation

table 10.7: Physical characteristics

**Dimensions (h x w x d), flat surface:**

92 x 440 x 400 mm (without brackets, with feet)

**Dimensions (h x w x d), 19-inch rack system:**

88 x 483 x 400 mm (with brackets, without feet)

**Weight:**

6.7 kg (without brackets, without feet)



**Note**

When you install the central control unit in a 19-inch rack system, the central control unit extends 36 mm in front of the brackets.

## 10.5 External connections

### 10.5.1 Power supply

Use the following procedure to connect the central control unit to a mains power supply:



**Note**

The DCN-WCCU is configured for a voltage of 220 - 240 V(AC). The DCN-WCCU-UL is configured for a voltage of 100 - 120 V(AC).

- 1 Set the voltage selector on the rear of the central control unit to the correct position (refer to table 10.8).

table 10.8: Voltage selector

Power supply voltage	Voltage selector
90 to 132 V(AC)	115
198 to 264 V(AC)	230

- 2 Make sure that the fuse holder in the rear of the central control unit contains the correct fuse (refer to table 10.9).

table 10.9: Fuses

Voltage selector	Fuse
115	T2.5A 250 V (UL 248)
230	T2AH 250 V (IEC 60127)

- 3 Connect a locally approved power cable to the central control unit (refer to figure 10.4).

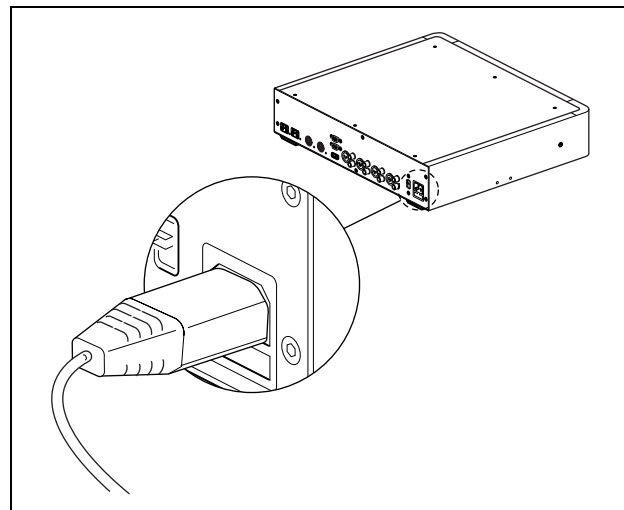


figure 10.4: Power supply

4 Connect the power cable to a power supply.



**Warning**

Make sure that the mains power supply is grounded. Electrical discharges from the mains power supply can kill you.

**10.5.2 DCN**

Connect the trunk of the DCN to the DCN sockets of the central control unit (refer to figure 10.5).

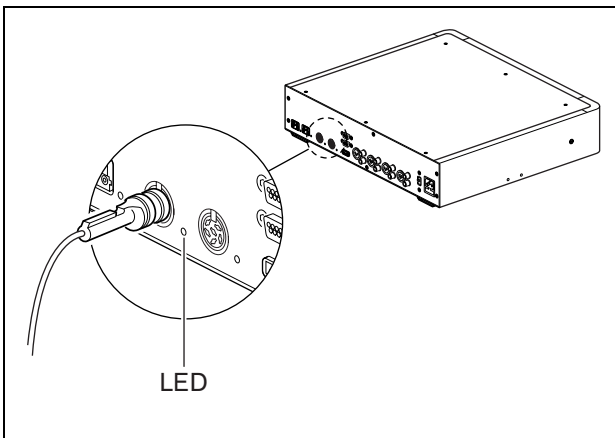


figure 10.5: DCN

Each DCN socket has a red LED that comes on if there is an overload (refer to figure 10.5 and 3.5.4).

table 10.10: DCN connection

<b>Number of connections:</b>
2x DCN socket
<b>Location:</b>
Rear side
<b>Power supply:</b>
max. 65 W

**10.5.3 Optical network**

Connect the trunk of the optical network to the optical network sockets of the central control unit with optical network cables (refer to figure 10.6).

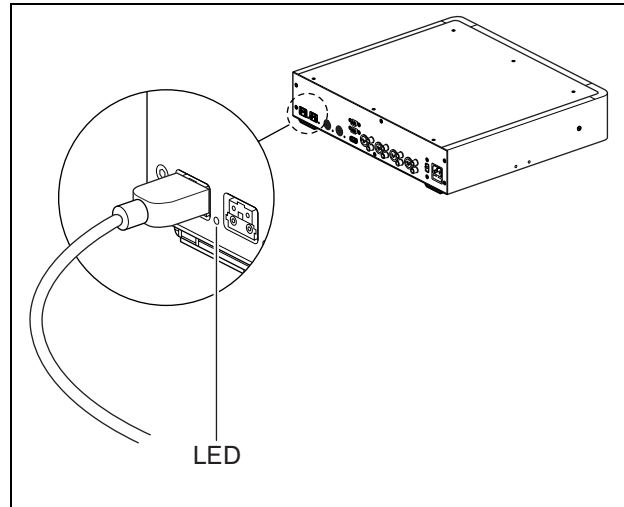


figure 10.6: Optical network

Each optical network socket has a red LED that comes on if there is an overload (refer to figure 10.6 and 3.5.4).

table 10.11: Optical network connections

<b>Number of connections:</b>
2x proprietary sockets
<b>Location:</b>
Rear side
<b>Nodes:</b>
2
<b>Power supply:</b>
max. 65 W (refer to figure 3.1)

## 10.5.4 Headphones

You can connect headphones to the headphones socket of the central control unit. The headphones must have a 3.5 mm plug (refer to figure 10.7).

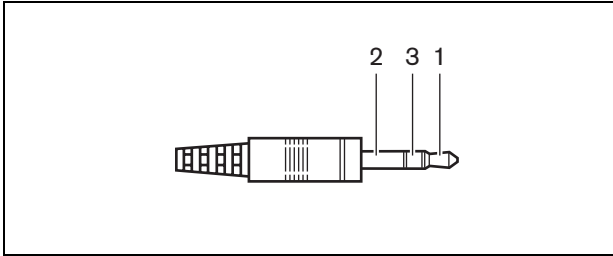


figure 10.7: 3.5 mm headphones plug, connection

table 10.12: 3.5 mm headphones plug, connection

Number	Signal
1	Left
2	Common
3	Right



### Note

You can also connect mono headphones to the headphones socket.

You can select the signal that is available on the headphones socket with the configuration menu (refer to 10.6.5).

## 10.5.5 Audio inputs

You can connect an external analog audio source to the audio inputs of the central control unit. The central control unit has two audio inputs. Each audio input has (refer to figure 10.8):

- 1 XLR socket for balanced signals. The electric circuits behind the XLR sockets contain transformers.
- 1 double cinch socket for unbalanced signals.



### Note

The audio inputs change stereo signals in mono signals.

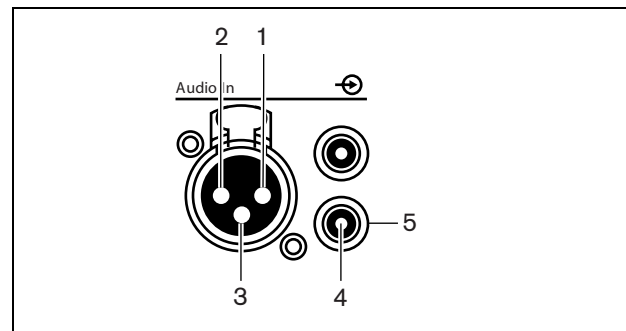


figure 10.8: Audio input, connection

table 10.13: Audio input, connection

Pin	Type	Signal	Description
1	XLR	Xternal	Shield/ground
2		Live	Positive
3		Return	Negative
4	Cinch	Live	Signal in
5		Return	Shield/ground

You can select the procedure that is used to send audio signals through the central control unit with the audio routing modes (refer to 10.6.8).

**Note**

You can only connect line level sources to the audio inputs of the central control unit. It is not possible to connect microphone level sources.

table 10.14: Audio input details, line level signals

<b>Number of connections:</b>
<ul style="list-style-type: none"> <li>• 1x XLR socket for each audio input</li> <li>• 1x double cinch socket for each audio input</li> </ul>
<b>Location:</b>
Rear side
<b>Cable:</b>
Shielded cable
<b>Maximum level:</b>
Refer to appendix A
<b>Nominal level:</b>
Refer to appendix A
<b>Frequency response:</b>
-3 dB @ 30 Hz and 20 kHz
<b>Impedance:</b>
<ul style="list-style-type: none"> <li>• XLR: 22 k<math>\Omega</math></li> <li>• Cinch: 12 k<math>\Omega</math></li> </ul>
<b>Signal-to-noise ratio:</b>
> 85 dBA @ max. level
<b>CMRR:</b>
> 60 dB @ 100 Hz
> 50 dB @ 1 kHz
<b>Crosstalk attenuation:</b>
> 85 dB @ max. level
<b>Distortion:</b>
< 0.1% @ 100 Hz @ -3 dB of the max. input

## 10.5.6 Audio outputs

You can connect an audio recording device or a public address system to the audio outputs of the central control unit. The central control unit has two audio outputs. Each audio output has (refer to figure 10.9):

- 1 XLR plug for balanced signals. The electric circuits behind the XLR plugs contain transformers.
- 1 double cinch socket for unbalanced signals.

**Note**

The two cinch sockets contain the same mono signal.

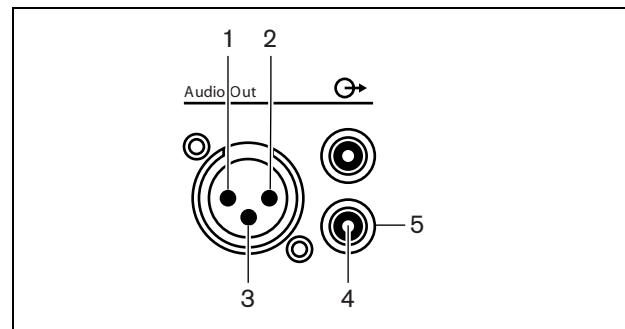


figure 10.9: Audio output, connection

table 10.15: Audio output, connection

Pin	Type	Signal	Description
1	XLR	Xternal	Shield/ground
2		Live	Positive
3		Return	Negative
4	Cinch	Live	Signal out
5		Return	Shield/Ground



You can select the procedure that is used to send audio signals through the central control unit with the available audio routing modes (refer to 10.6.8).

table 10.16: Audio output details

<b>Number of connections:</b>
<ul style="list-style-type: none"> <li>• 1x XLR plug for each audio output</li> <li>• 1x double cinch socket for each audio output</li> </ul>
<b>Location:</b>
Rear side
<b>Cable:</b>
Shielded cable
<b>Maximum level:</b>
Refer to appendix A
<b>Nominal level (audio output 1):</b>
Refer to appendix A
<b>Nominal level (audio output 2):</b>
Refer to appendix A
<b>Frequency response:</b>
-3 dB @ 30 Hz and 20 kHz
<b>Impedance:</b>
< 100 $\Omega$
<b>Signal-to-noise ratio:</b>
> 89 dBA @ max. level
<b>Crosstalk attenuation:</b>
> 85 dB @ max. level
<b>Distortion:</b>
< 0.1% @ 100 Hz @ - 3 dB of the max. input

## 10.5.7 Fault contact

Use the fault contact to send the condition of the central control unit to external devices. If the central control unit operates correctly, the OK pins are internally connected. The central control unit internally connects the Fail pins when:

- The central control unit is set to off.
- The internal power supply unit operates incorrectly.
- The central control unit does a reset.

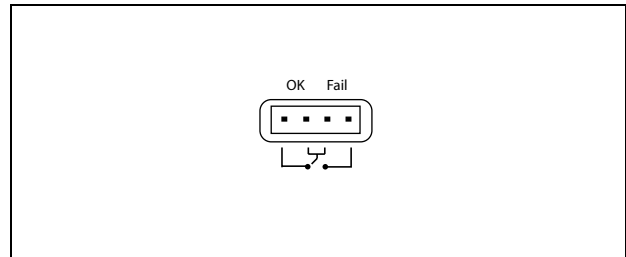


figure 10.10: Fault contact

table 10.17: Fault contact

<b>Number of connections:</b>
4-pole plug
<b>Location:</b>
Rear side
<b>Signal:</b>
Potential-free change-over relay
<b>Voltage:</b>
Max. 24 V(DC), 15 V(AC)
<b>Current:</b>
Max. 500 mA

## 10.5.8 RS232 ports

You can connect a PC, remote controllers or video cameras to the RS232 ports of the central control unit (refer to the DCN Next Generation Installation and User Instructions). The central control unit has 2 RS232 ports (refer to figure 10.11). You can set the protocol and the baudrate of the RS232 ports with the S500 switches (refer to 10.3.3).

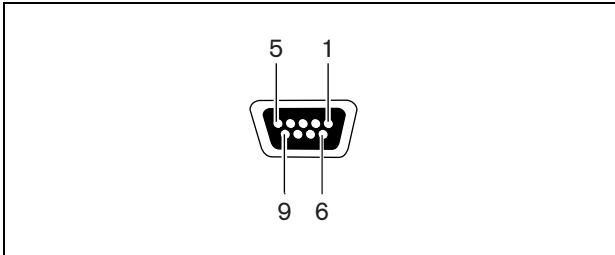


figure 10.11: RS232 port, connection

table 10.18: RS232 port, connection

Pin	Definition	Description
1	DCD	Data Carrier Select
2	RxD	Receive Data
3	TxD	Transmit Data
4	DTR	Data Terminal Ready
5	SG	Signal Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicator

table 10.19: RS232 ports

<b>Number of connections:</b>
2x 9-pole SUB-D socket
<b>Location:</b>
Rear side
<b>Maximum cable length:</b>
9600 baud: 15 m, >9600 baud: 3 m
<b>Signal levels:</b>
EIA RS232-C interface specifications

## 10.6 Configuration menu

### 10.6.1 Overview

Use the configuration menu of the central control unit to configure the central control unit and the system (refer to figure 10.12).

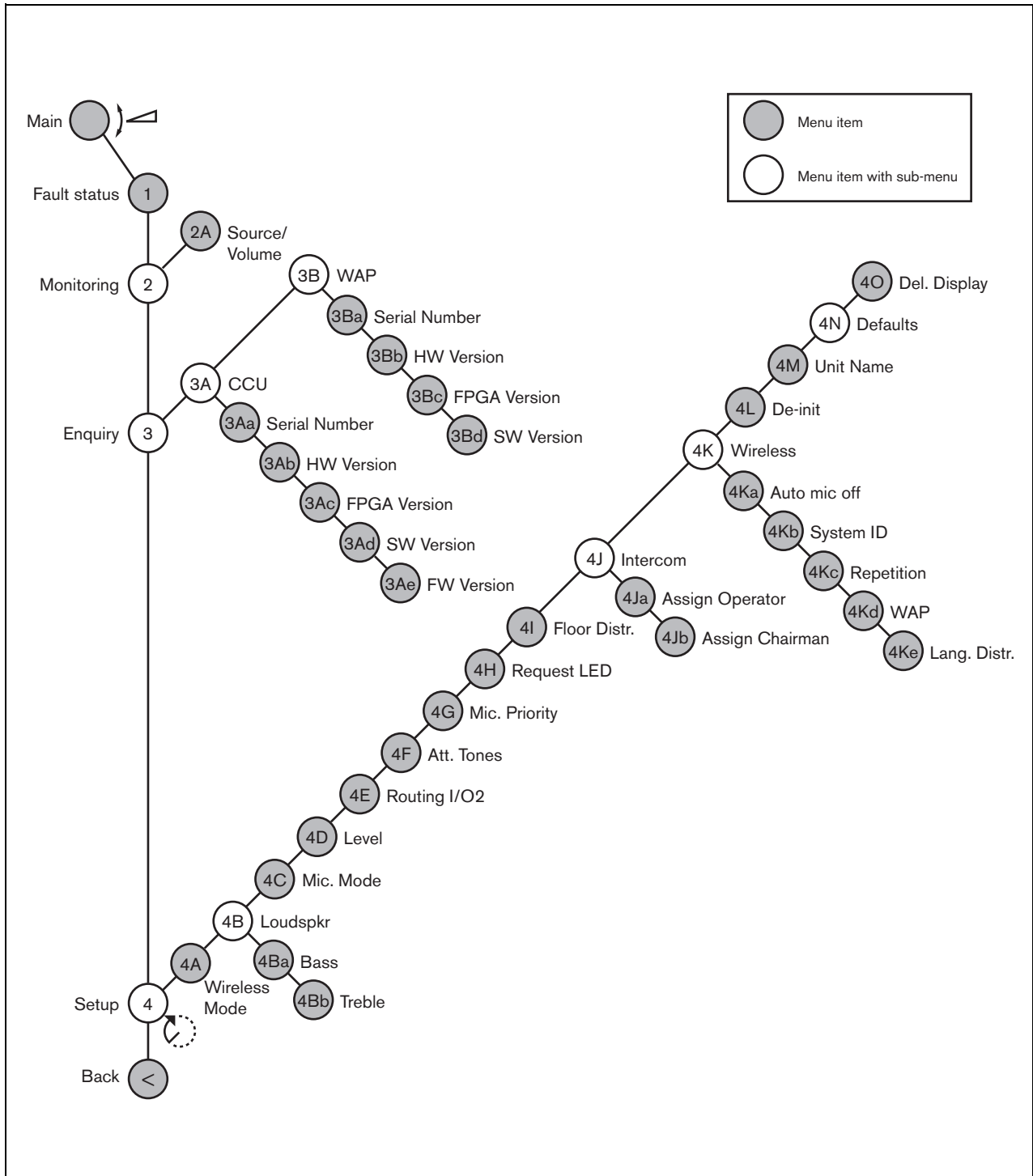


figure 10.12: Configuration menu

## 10.6.2 Navigation and operation

### 10.6.2.1 Menu items

The configuration menu consists of menu items. Refer to figure 10.13 for the parts of a menu item.

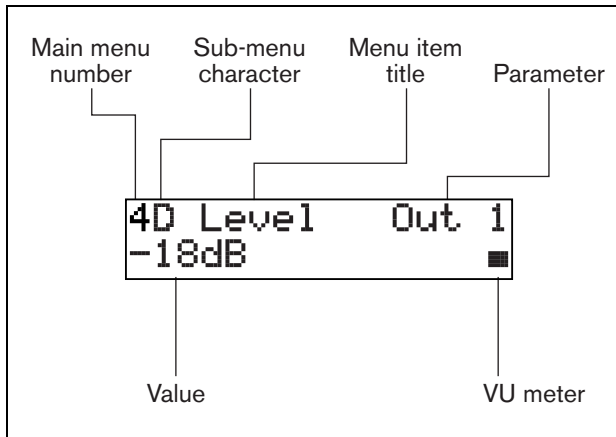


figure 10.13: Menu item parts

### 10.6.2.2 Number and characters

Identify menu items by the main menu number sub-menu character. The number identifies the main menu to which the menu item is connected. The characters identify the sub-menus to which the menu item is connected.

### 10.6.2.3 Menu title

Each menu item has a title. The title gives a short description of the function of the menu item.

### 10.6.2.4 Parameters and values

Most menu items have one or more parameters. To make adjustments, change the values of the parameters.

### 10.6.2.5 VU meter

Some menu items have a VU meter. The VU meter shows the volume levels of signals. The VU meter has seven rows.

table 10.20: VU meter

VU meter	Description
One row on	No signal
Seven rows on	Maximum signal
Triangle	Clipped signal
Minus	Muted by control input

### 10.6.2.6 To open the main menu

To open the main menu, push the knob in the Main menu item. The main menu number and the menu item title flash.

### 10.6.2.7 To go through the main menu

- Turn the knob clockwise in the main menu to go to the next menu item in the main menu.
- Turn the knob counterclockwise in the main menu to go to the previous menu item in the main menu.

### 10.6.2.8 To open a sub-menu

When the display shows a menu item that has three dots (...), the menu item gives access to a sub-menu. To open the sub-menu, push the knob in a menu item that has three dots. (The last sub-menu character and the menu item title flash.)



#### Note

To open the Setup sub-menu, you must push and hold the knob for more than 3 seconds.

### 10.6.2.9 To select menu items in a sub-menu

- Turn the knob clockwise in a sub-menu to go to the next menu item in the sub-menu.
- Turn the knob counterclockwise in a sub-menu to go to the previous menu item in the sub-menu.

### 10.6.2.10 To open a menu item

- 1 Turn the knob to select the applicable menu item.
- 2 When the display shows the correct menu item, push the knob to open the menu item. The display shows a cursor.

**10.6.2.11 To select a parameter**

- 1 Open the correct menu item (refer to 10.6.2.10).
- 2 Turn the knob to move the cursor to the parameter that is shown.
- 3 On the parameter, push the knob. The parameter flashes.
- 4 Turn the knob to go to the applicable parameter.
- 5 When the display shows the applicable parameter, push the knob to select the parameter. The display shows a cursor.

**10.6.2.12 To change the value of a parameter**

- 1 Select the applicable parameter (refer to 10.6.2.11).
- 2 Turn the knob to move the cursor to the value.
- 3 Push the knob. The value flashes.
- 4 Turn the knob to go to the value.
- 5 When the display shows the correct value, push the knob to select the value. The display shows a cursor.

**10.6.2.13 To close a menu item**

- 1 Turn the cursor to the last character that identifies the menu item.
- 2 Push the knob to close the menu item. The last character and the menu item title flash.

**10.6.2.14 To close a sub-menu**

- 1 Turn the cursor to go to the second last character that identifies the menu item.
- 2 Push the knob to close the sub-menu. The last character and the menu item title flash.

**10.6.2.15 To close the main menu**

- 1 From the main menu, turn the primary knob clockwise to go to the < Back menu item.
- 2 From the < Back menu item, push the knob to go to the Main menu item.

**10.6.2.16 Example**

For an example, do as follows to select the carrier of the wireless access point:

**Note**

Make sure that when you do this example, you start from the Main menu item.

- 1 Push the knob to open the Main menu.

1 Fault Status  
No Fault

- 2 Turn the knob clockwise until 4 Setup ... is reached.

4 Setup ...

- 3 Push-and-hold the knob for 3 seconds to open the sub-menu.

4A Wireless Mode  
On

- 4 Turn the knob clockwise until 4K Wireless is reached.

4K Wireless ...

- 5 Push the knob to open the sub-menu..

4Ka Auto Mic Off  
Enabled

- 6 Turn the knob clockwise until 4Kd WAP is reached.

```
4Kd WAP
Carrier:2 High
```

- 7 Push the knob to open the menu item.

```
4Kd WAP
Carrier:2 High
```

- 8 Turn the knob to move the cursor to the currently selected carrier, for example Carrier: 2.

```
4Kd WAP
Carrier:2 High
```

- 9 Push the knob to select the carrier. The carrier number will start to flash.

```
4Kd WAP
Carrier:2 High
```

- 10 Turn the knob to change the carrier, for example Carrier: 1.

```
4Kd WAP
Carrier:1 High
```

- 11 Push the knob to select the carrier.

```
4Kd WAP
Carrier:1 High
```

To return to the main menu:

- 1 Turn the knob to move the cursor to the main menu number, for example 4.

```
4Kd WAP
Carrier:1 High
```

- 2 Push the knob to go back to the Main menu.

```
4 Setup ...
```

- 3 Turn the knob clockwise until < Back is reached.

```
< Back
```

- 4 Push the knob to go back to the main screen.

```
CCU
Open 2
```

### 10.6.3 Main

When you start the central control unit, the display first shows Starting. The display then shows the Main menu item:



The Main menu item contains:

- An indicator that shows the volume level of the loudspeakers of the contribution devices. Turn the knob to change the volume level (refer to 12.6).
- The name of the central control unit. The default name is CCU. You can change the name with the 4M Unit Name menu item (refer to 10.6.8).
- The microphone mode and the maximum number of activated microphones. You can change the microphone mode and the maximum number of activated microphones with the 4C Mic. Mode menu item (refer to 10.6.8).



#### Note

When a PC is connected to the central control unit, the Main menu item also shows PC.



#### Note

When the condition of the central control unit changes, the Main menu item shows a message (refer to table 10.21). Such a message goes out of view when you push the knob.



#### Note

If you do not turn or push the knob for three minutes, the display automatically goes back to the Main menu item. The display does not automatically go back to the Main menu item from these menu items and their sub-menus:

- 2A Source/Volume
- 4Ja Assign Operator
- 4Jb Assign Chairman

### 10.6.4 Fault status

Use the 1 Fault Status menu item to see the condition messages of the central control unit. If there is more than one message, the display shows the most important message (refer to table 10.21).

table 10.21: Messages (low to high importance)

Messages	Description
No Fault	The central control unit operates correctly.
Low Battery	The battery pack of a wireless device is empty within 1 hour.
Bad Signal	A wireless device has a bad signal reception.
Incompatible SW	The wireless access point has a incompatible software version.
Invalid Software	The central control unit cannot start. The central control unit does not contain the correct software.
Downloading	The central control unit downloads software.

## 10.6.5 Monitoring

Use the 2 Monitoring menu item to open the Monitoring sub-menu (refer to table 10.22).

table 10.22: Monitoring sub-menu (\* = default)

Menu item	Parameter	Value	Description
2A Source/Volume	<u>Signal:</u>	<u>Volume level:</u>	The signal that is available on the headphones socket of the central control unit and its volume level.
	Floor	-31 to 0 dB (16 dB*)	
	Input 1	-31 to 0 dB (16 dB*)	
	Input 2	-31 to 0 dB (16 dB*)	
	Output 1	-31 to 0 dB (16 dB*)	
	Output 2	-31 to 0 dB (16 dB*)	

## 10.6.6 DCN-WCCU Enquiry

Use the 3A CCU menu item to open the CCU sub-menu. The menu items in this sub-menu give general data about the central control unit (refer to table 10.23).



### Note

This data must be mentioned in all service requests and failure reports.

table 10.23: DCN-WCCU Enquiry sub-menu (\* = default)

Menu item	Parameter	Value (read-only)	Description
3Aa Serial Nr	---	e.g. 20.0.00362	The hexadecimal serial number of the central control unit.
3Ab HW Version	---	e.g. 3.0	The version number of the hardware of the central control unit.
3Ac FPGA Version	---	e.g. 1.06	The version number of the FPGA firmware of the central control unit.
3Ad SW Version	---	MM.mm.bbbb e.g. 2.20.1234	The version number of the software of the central control unit. <ul style="list-style-type: none"> <li>• MM: Major release no.</li> <li>• mm: Minor release no.</li> <li>• bbbb: build no.</li> </ul>
3Ae FW Version	---	MM.mm.bbbb e.g. 4.00.1234	The version number of the firmware of the central control unit. <ul style="list-style-type: none"> <li>• MM: Major release no.</li> <li>• mm: Minor release no.</li> <li>• bbbb: build no.</li> </ul>



## 10.6.7 DCN-WAP Enquiry

Use the 3B WAP menu item to open the WAP sub-menu. The menu items in this sub-menu give general data about the wireless access point (refer to table 10.23).



### Note

This data must be mentioned in all service requests and failure reports.

table 10.24: DCN-WAP Enquiry sub-menu (\* = default)

Menu item	Parameter	Value (read-only)	Description
3BA Serial Nr	---	e.g. 1E.0.00001	The hexadecimal serial number of the wireless access point.
3Bb HW Version	---	e.g. 01.00	The version number of the hardware of the wireless access point.
3Bc FPGA Version	---	MM.mm.bbbb e.g. 01.00	The version number of the FPGA firmware of the wireless access point. <ul style="list-style-type: none"> <li>• MM: Major release no.</li> <li>• mm: Minor release no.</li> <li>• bbbb: build no.</li> </ul>
3Bd SW Version	---	MM.mm.bbbb e.g. 2.20.0055	The version number of the software of the wireless access point. <ul style="list-style-type: none"> <li>• MM: Major release no.</li> <li>• mm: Minor release no.</li> <li>• bbbb: build no.</li> </ul>

## 10.6.8 Setup

Use the 4 Setup menu item to open the Setup sub-menu. You can use the menu items in this sub-menu to configure the central control unit and the system (refer to table 10.25 and table 10.26).

table 10.25: Setup sub-menu (\* = default)

Menu item	Parameter	Value	Description
4A Wireless Mode	---	On* Sleep Off Subscription	Sets the mode of the wireless network (refer to 12.3).
4B Loudspkr	---	---	Gives access to the Loudspkr sub-menu (refer to 10.6.9).
4C Mic. Mode	<u>Mode:</u> Open* Override PTT	<u>NOM:</u> 1, 2*, 3 1, 2*, 3 1, 2*, 3	The microphone mode of the DCN and the maximum number of activated delegate microphones (refer to 12.4).
4D Level	<u>Signal:</u> Input 1 Input 2 Output 1 Output 2	<u>Level:</u> -6 to 6 dB (0 dB*) -6 to 6 dB (0 dB*) -24 to 6 dB (0 dB*) -24 to 6 dB (0 dB*)	The nominal levels of the audio inputs and the audio outputs of the central control unit.
4E Routing I/O 2	---	<u>Mode:</u> Recorder* Equalized PA Mix-minus Insertion	The audio routing mode of the central control unit (refer to 12.6).
4F Att. Tones	<u>Event:</u> Priority Voting	<u>Chime:</u> Off, 1*, 2, 3 Off*, 1, 2, 3	The attention chimes of the system (refer to 12.7).
4G Mic. Priority	---	Temporarily off* Permanently off	The action taken by the system when the chairman releases the priority button (refer to 12.8).
4H Request LED	LED setting	Flashing*, Continuous	Sets the behaviour of the request LED for the first delegate in the request list.

table 10.26: Setup sub-menu (\* = default)

Menu item	Parameter	Value	Description
4I Floor Distr.	---	On*, Off	Enables or disables floor distribution (refer to 12.9).
4J Intercom ...	---	---	Gives access to the Intercom sub-menu (refer to 10.6.10).
4K Wireless	---	---	Gives access to the Wireless sub-menu (refer to 10.6.11). When the wireless access point is not connected, the central control unit shows Not Available.
4L De-Init ...	---	---	Gives access to the De-initialization menu item (refer to 10.6.12).
4M Unit Name	---	<u>Name:</u> CCU* Custom name	The name of the central control unit (max. 16 characters).
4N Defaults ...	---	---	Gives access to the Reset menu item (refer to 10.6.13)
4O Del. Display	---	<u>Language:</u> English* German French Italian Dutch Spanish	The language that is used by the displays of the contribution devices. Other languages (e.g. Chinese) can be downloaded to the CCU, but will overwrite the default languages. The English language cannot be overwritten.

### 10.6.9 Loudspkr

Use the menu items in the 4B Loudspkr sub-menu to set the levels of the bass and treble output to the loudspeakers of the contribution devices (refer to table 10.27).

table 10.27: Loudspkr sub-menu (\* = default)

Menu item	Parameter	Value	Description
4Ba Bass	---	-12 to 12 dB (0 dB*)	The level of the bass output.
4Bb Treble	---	-12 to 12 dB (0 dB*)	The level of the treble output.

### 10.6.10 Intercom

Use the menu items in the 4J Intercom sub-menu to identify the location of the chairman and the operator (refer to table 10.28 and 12.10).

table 10.28: Intercom sub-menu (\* = default)

Menu item	Parameter	Value	Description
4Ja Assign	Operator	No*	Does not identify the location of the operator.
		Yes	Identifies the location of the operator.
4Jb Assign	Chairman	No*	Does not identify the location of the chairman.
		Yes	Identifies the location of the chairman.

### 10.6.11 Wireless

Use the menu items in the 4K Wireless sub-menu to configure the wireless network of the system (refer to table 10.29).

table 10.29: Wireless sub-menu (\* = default)

Menu item	Parameter	Value	Description
4Ka Auto mic off	---	Enabled*, Disabled	Enables or disables the auto microphone off function (refer to 12.4.5).
4Kb System ID	---	0* to 15	Sets the identifier of the system (refer to 11.6.2).
4Kc Repetition	---	0* to 2	Sets the number of repetitions of audio packets (refer to 12.5).
4Kd WAP	---	<u>Carrier:</u> 0* to 2	Sets the carrier of the wireless access point (refer to 11.6.3).
		<u>Power:</u> High* Medium Low Off	Sets the power of the wireless access point (refer to 11.6.4).
4Ke Lang. Distr.	Language distribution	Enabled, Disabled*	Enables or disables language distribution in the wireless network. Refer to limits 4 and 5 in chapter 1.2

### 10.6.12 De-init

Use the 4L De-initialize menu item in the 4L De-Init sub-menu to erase the addresses of the contribution devices and the interpretation devices (refer to table 10.30 and 12.2).

table 10.30: De-init sub-menu (\* = default)

Menu item	Parameter	Value	Description
4L De-init	De-initialize	None*	Does not erase the addresses.
		Wired	Erases the addresses of the wired devices in the DCN.
		Wireless	Erases the subscription list of the devices in the wireless network.

### 10.6.13 Defaults

Use the 4N Defaults sub-menu to set all parameters to the default values in the configuration menu (refer to table 10.31). This includes the values of the parameters of the interpreter desks. These parameters are not changed:

- The subscription list of wireless devices
- The name of the central control unit

table 10.31: Defaults sub-menu (\* = default)

Menu item	Parameter	Value	Description
4N Defaults	Reset to defaults?	No*	Does not put back the default values.
		Yes	Sets all parameters to the default values.

### 10.6.14 Delegate Display

Use the 4O menu to select a language that is used on the display of a wired contribution device (refer to table 10.32).

table 10.32: Delegate display sub-menu

4O Del. Display	---	<u>Language:</u>	The language that is used by the displays of the contribution devices. Other languages (e.g. Chinese) can be downloaded to the CCU, but will overwrite the default languages. The English language cannot be overwritten.
		English*	
		German	
		French	
		Italian	
		Dutch	
		Spanish	

## 11 DCN-WAP Wireless Access Point

### 11.1 Introduction

The wireless access point:

- Sends signals from the central control unit to the wireless devices.
- Receives signals from the wireless devices and sends them to the central control unit.

### 11.2 Firmware

The version numbers of the software of the wireless access point (refer to 10.6.7) and the central control unit (refer to 10.6.6) must be the same.



#### Note

Use the Download and License Tool to send new software to the wireless access point.

### 11.3 Controls, connectors and indicators

The wireless access point contains:

- 1 **Status LEDs** - Give information about the condition of the wireless network and the wireless access point (refer to 11.7).
- 2 **Optical network sockets** - Connect the wireless access point to the optical network (refer to 11.5.1).

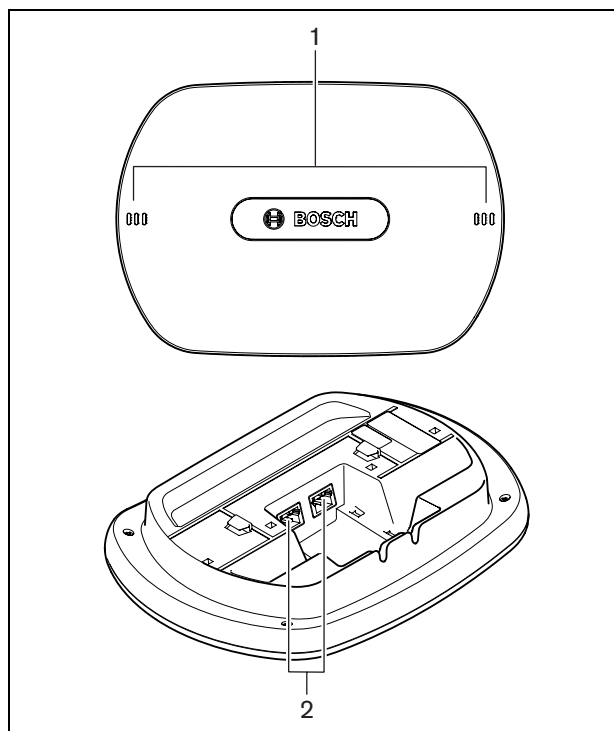


figure 11.1: Top and bottom views

## 11.4 Installation

### 11.4.1 General



#### Caution

Do not open the wireless access point. Any hardware change makes the product certificates invalid. Only qualified personnel can open the wireless access point.

table 11.1: Physical characteristics

#### Dimensions (h x w x d):

284.5 x 201.5 x 59 mm

#### Weight:

- DCN-WAP: 643 g (without bracket)
- Bracket: 264 g

### 11.4.2 Wall or ceiling

You can use the bracket to attach the wireless access point to a wall or ceiling. Refer to figure 11.2.

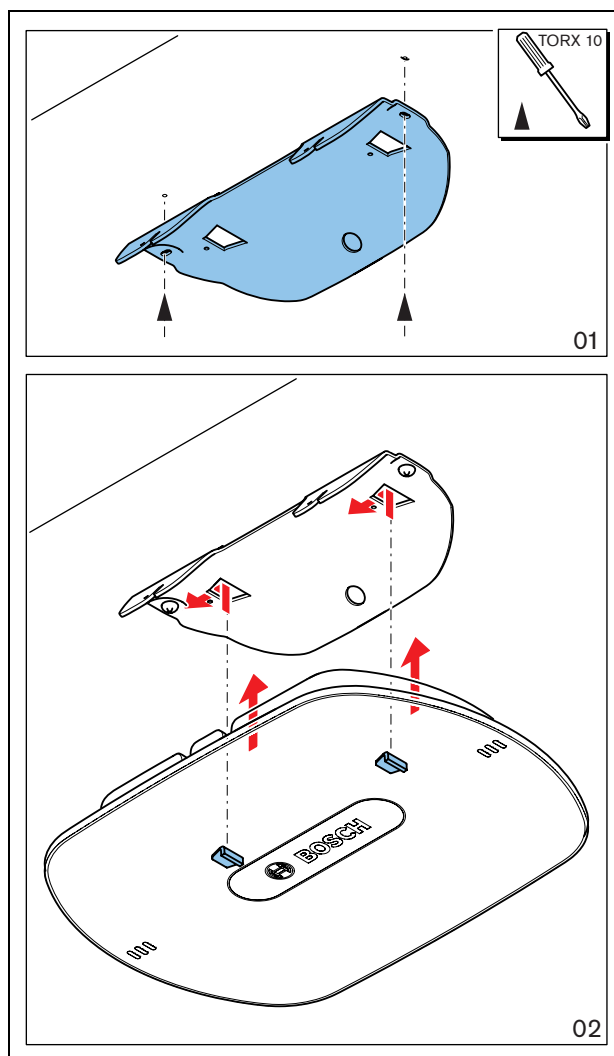


figure 11.2: Installation, wall and ceiling

### 11.4.3 Tripod

You can use the bracket to install the wireless access point on an LBC1259/00 Universal Floor-stand. Refer to figure 11.3.

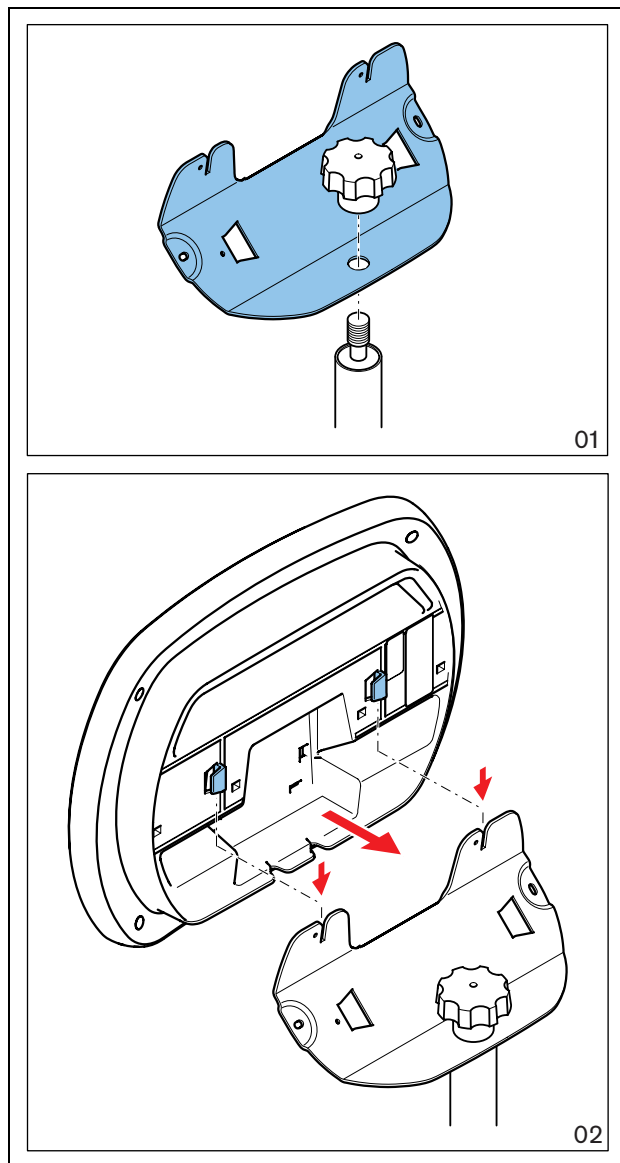


figure 11.3: Installation, LBC1259/00

### 11.4.4 Logo

You can change the orientation of the logo. Refer to figure 11.4:

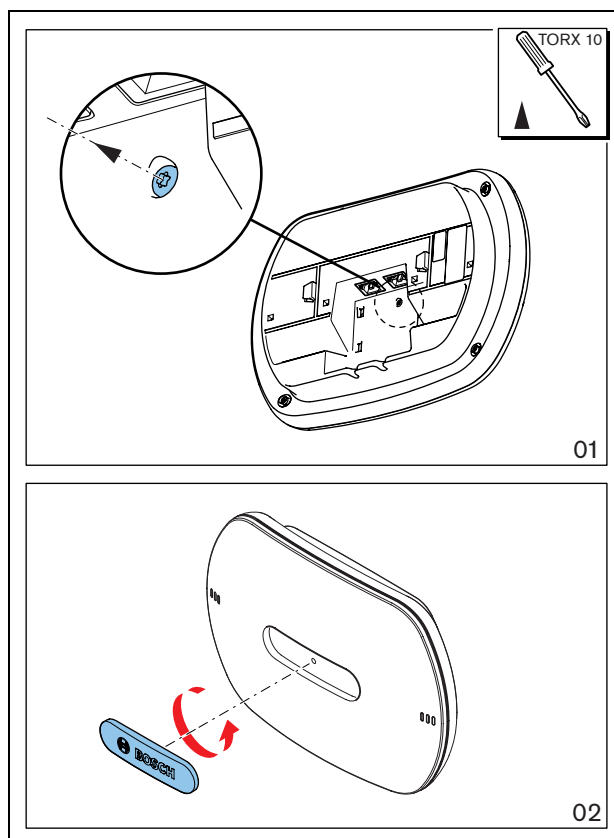


figure 11.4: Installation, logo



## 11.5 External connections

### 11.5.1 Optical network

Connect the optical network sockets of the wireless access point to the optical network with optical network cables (refer to figure 11.5).

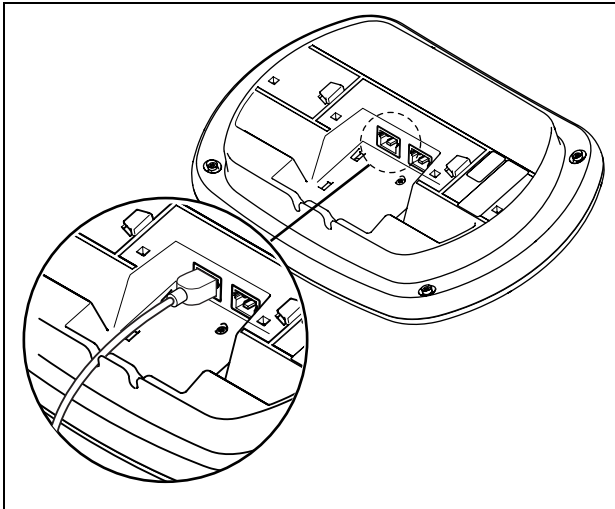


figure 11.5: Optical network

table 11.2: Optical network connections

<b>Number of connections:</b>	2x proprietary sockets
<b>Location:</b>	Bottom side
<b>Nodes:</b>	1
<b>Power consumption</b>	4 W

## 11.6 Configuration

### 11.6.1 Introduction

Use the configuration menu of the central control unit to configure the wireless access point.

### 11.6.2 System ID



#### Note

Set the correct system identity before you do the installation of the system (refer to section 12.2.2). When you change the system identity after you did the initialization, you must do the initialization again.

Set the system identity with the 4Kb System ID menu item. Adjacent systems must have different system identities (refer to figure 11.6) and different carriers (refer to figure 11.7)

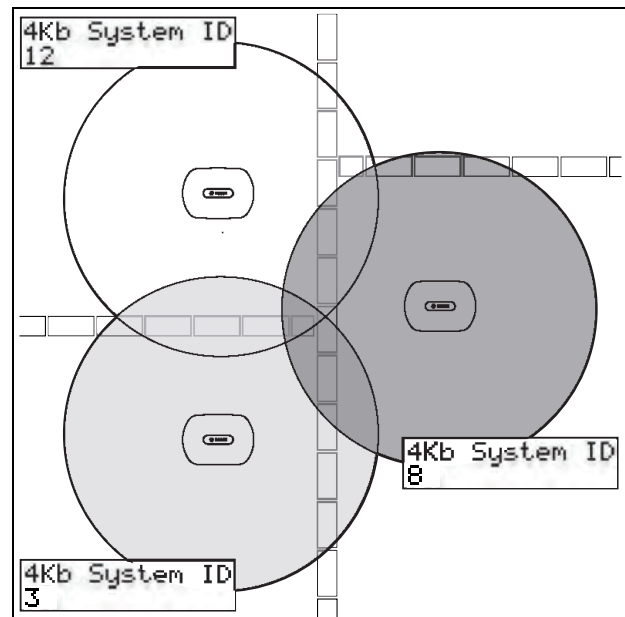


figure 11.6: System IDs for adjacent systems

### 11.6.3 Carrier

Set the carrier of the wireless access point with the 4Kd WAP menu item. Adjacent systems must have different carriers (refer to figure 11.7) and different system identities (refer to figure 11.6).



#### Note

If adjacent systems are using the same carrier, they must be separated by a minimum distance of 500 m.

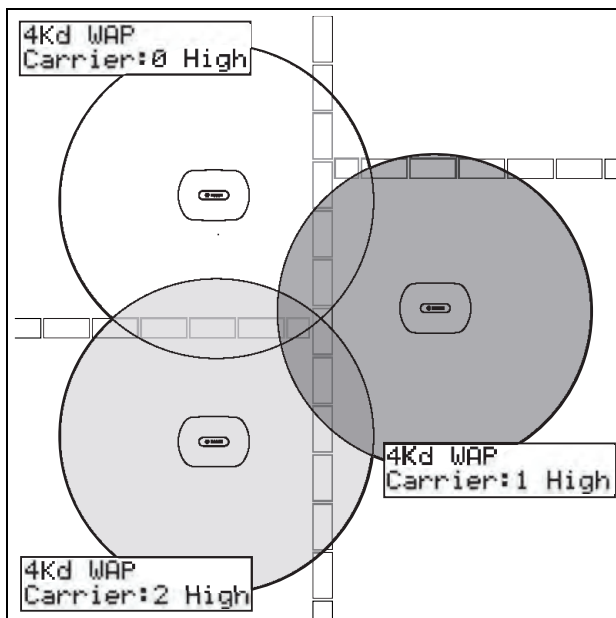


figure 11.7: Carriers for adjacent systems

You can change the carrier after you did the initialization of the system (refer to 12.2.2).



#### Note

When you change the carrier during a discussion or conference, you can cause a short audio disruption.

### 11.6.4 Power value

The wireless access point has a typical maximum coverage area of 30 m by 30 m. To determine the exact coverage area the coverage test kit can be used. The maximum coverage area of the wireless access point is dependent upon its power (refer to table 11.3). Set the power of the wireless access point with the 4Kd WAP menu item.

table 11.3: Power values

Value	Typical Coverage Area (m)
High	30 x 30
Medium	20 x 20
Low	10 x 10
Off	0

You can change the power value after you did the initialization of the system (refer to 12.2.2). When you decrease the power value, some wireless devices can show that they cannot find the wireless network (refer to 14.8.6).

## 11.7 Operation

The LEDs on the wireless access point give information about the condition of the wireless network and the wireless access point (refer to figure 11.8 and table 11.4).



### Note

You can change the condition of the system with the configuration menu of the central control unit (refer to 10.6.11).

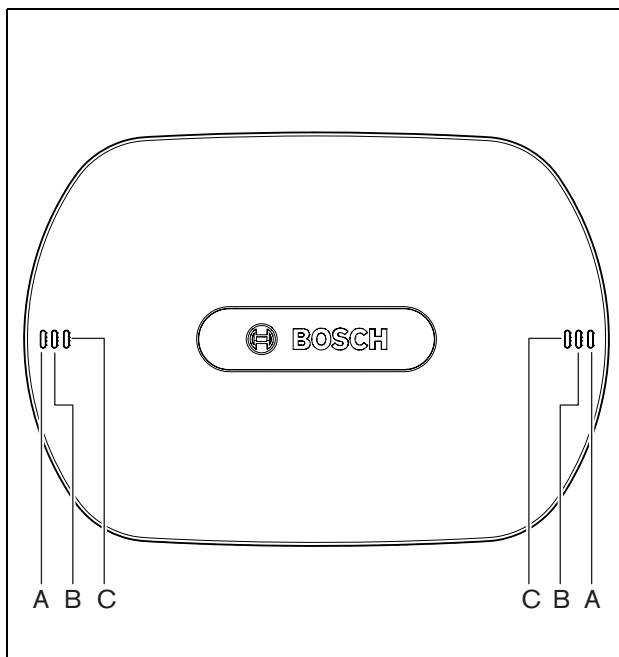


figure 11.8: Status LEDs

table 11.4: Status LEDs

Blue (A)	Red (B)	Blue (C)	Description
Flashing (fast)	Off	Off	The wireless mode is set to On (refer to table 10.25), and no wireless contribution devices are connected to the system.
Flashing (fast)	Off	Flashing (fast)	No wireless contribution devices are connected, and menu item 3B, one of the 3B submenus, or 4Kd of the configuration menu of the central control unit is open. Use these menu items to configure the wireless access point (refer to figure 10.12).
Flashing (fast)	Off	On	The wireless mode is set to Subscription (refer to table 10.25), and no wireless contribution devices are connected to the system.
Flashing (slow)	Off	Flashing (fast)	The wireless mode is set to Sleep (refer to table 10.25), and menu item 3B, one of the 3B submenus, or 4Kd of the configuration menu of the central control unit is open. Use these menu items to configure the wireless access point (refer to figure 10.12).
Flashing (slow)	Off	Off	The wireless mode is set to Sleep (refer to table 10.25).
Off	Flashing (fast)	Off	The system prepares a software transfer to the wireless access point.
Off	Flashing (slow)	Off	The wireless mode is set to Off (refer to table 10.25), or the power value of the wireless access point is set to Off (refer to table 11.3). This LED sequence is also used to indicate that the central control unit is incompatible with the wireless access point (if this is the case, a message is also shown on the display of the central control unit).
Off	Off	Off	The wireless access point is off.
Off	On	Off	The wireless access point lost connection with the optical network.
On	Flashing (fast)	Off	The system sends software to the wireless access point.
On	Off	Flashing (fast)	One or more wireless contribution devices are connected to the system, and menu item 3B, one of the 3B submenus, or 4Kd of the configuration menu of the central control unit is open. Use these menu items to configure the wireless access point (refer to figure 10.12).
On	Off	On	The wireless mode is set to Subscription (refer to table 10.25), and one or more devices are connected to the system.
On	Off	Off	The wireless mode is On (refer to table 10.25), and one or more wireless contribution devices are connected to the system.
On	On	On	Internal error in wireless access point.

**Note:**

- Flashing (fast) = one second on, one second off.
- Flashing (slow) = one sec on, three seconds off.

## 12 System configuration

### 12.1 Introduction

The central control unit controls the system. Use the configuration menu of the central control unit to configure the system.

### 12.2 Initialization

#### 12.2.1 Introduction

Each active DCN device in the system must have an address. The central control unit cannot send data to an active DCN device that does not have an address. During the initialization, the central control unit gives addresses to the active DCN devices.

Each wireless device in the system must have a subscription. The central control unit cannot send data to a wireless device that does not have a subscription. During the initialization, the wireless access point gives subscriptions to the wireless devices.

#### 12.2.2 System

You must do the initialization of the system before you can use the system:



#### Note

It is not necessary to do an initialization when the system is re-installed in another location and contains the same devices after it is re-installed. Active DCN devices hold their addresses. Wireless devices hold their subscriptions.

- 1 Select the 4L De-initialize menu item of the configuration menu of the central control unit.

```
4L De-Initialize
None
```

- 2 Set the value of the parameter in the menu item to Wired. The addresses of all active devices in the DCN are erased. All LEDs on all active devices in the DCN come on.

```
4L De-Initialize
Wired
```



#### Note

In the next step, you erase the subscriptions from the wireless devices and the subscription list from the wireless access point.

- 3 Set the value of the parameter in the menu item to Wireless. The LED around the microphone button of the wireless discussion units comes on as yellow for 2 s.

```
4L De-Initialize
Wireless
```

- 4 Select the 4A Wireless Mode menu item of the configuration menu of the central control unit.
- 5 Set the value of the parameter in the menu item to Subscription.

```
4A Wireless mode
Subscription
```

- 6 Push the microphone button of each active device in the DCN. When the central control unit gives an address to an active DCN device, the LEDs of the active device go off.



#### Note

Do not push more than one microphone button at the same time. The central control unit cannot give addresses to more than one active device at the same time.

- 7 Push the microphone button of each wireless device. When the central control unit gives a subscription to the wireless discussion unit, the LED around the microphone button comes on as green for 2 s.

### 12.2.3 Extra DCN devices

You can also give addresses to active devices in the DCN after you did the initialization of the system.

- Push the de-init switch of the active DCN device for less than half a second to erase the address of the active device.
- Push and hold the de-init switch of the active DCN device for more than one second to erase the address and do the initialization at the same time.

### 12.2.4 Extra wireless devices

You can also give subscriptions to wireless device after you did the initialization of the system. Refer to 14.6 for instructions.

## 12.3 Wireless modes

### 12.3.1 Introduction

You can set the wireless mode of the system with the 4A Wireless Mode menu item.

### 12.3.2 On

If the wireless mode is On, the wireless network is activated. The delegates and chairman can use the wireless devices that:

- Have a subscription, and
- Are activated.

### 12.3.3 Sleep

If the wireless mode is Sleep, the wireless network is in the sleep mode. Use the sleep mode to increase the time between charge of the batteries (for example, during a long break in a discussion or conference).



#### Note

The wireless devices are not deactivated in the sleep mode.

### 12.3.4 Off

If you set the wireless mode to Off, the wireless network is deactivated. All wireless devices with a subscription are automatically deactivated.

### 12.3.5 Subscription mode

If the wireless mode is Subscription, the wireless network is in the subscription mode. Use the subscription mode to give subscription to extra wireless devices (refer to 12.2.4).



#### Note

The central control unit automatically goes back to the previous wireless mode 15 minutes after the last wireless device got a subscription.

## 12.4 Microphone modes

### 12.4.1 Introduction

Select the microphone mode with the 4C Mic. Mode menu item (refer also to 10.6.8). You must also set the maximum number of activated delegate microphones.

**Note**

The system has 4 audio channels. The delegates can use three channels, the chairmen can use one channel. When more than one chairman devices are installed in the system, the next chairman that activates his or her microphone automatically deactivates the microphone of the previous chairman.

### 12.4.2 Open

In the Open mode, delegates can activate their microphones with the microphone button on their contribution devices. When the maximum number of delegates speak, the next delegate that activates his or her microphone makes a request-to-speak. The microphone is not activated until another delegate deactivates his or her microphone.

**Note**

Microphones of chairman devices can always be activated in the Open mode.

### 12.4.3 Override

In the Override mode, delegates can activate their microphones with the microphone button on their contribution device. When the maximum number of delegates speak, the next delegate that activates his or her microphone automatically deactivates the microphone that was activated for the longest time.

**Note**

Microphones of chairman units can always be activated in the Override mode.

### 12.4.4 PTT

In the PTT (push-to-talk) mode, the delegates can activate their microphones with the microphone button on their contribution devices. The microphone is activated as long as the microphone button is pushed. When the maximum number of delegates speak, the other delegates cannot activate their microphones.

**Note**

Microphones of chairman units can always be activated in the PTT mode.

### 12.4.5 Auto mic off

Enable or disable the auto microphone off function with the 4Ka Auto mic off menu item. When the auto microphone off function is enabled, the microphones of the wireless devices are automatically deactivated when they are not used for 30 seconds.

## 12.5 Repetition rate

When other wireless networks cause interference, the audio quality can decrease. In some cases, you can increase the repetition rate of the audio packets to improve the audio quality. You can change the repetition rate of the audio packets with the 4Kc Repetition menu item.



**Note**

When you increase the repetition rate, the audio delay is increased.

## 12.6 Audio routing modes

### 12.6.1 Introduction

You can set the audio routing mode of the system with the 4E Routing I/O 2 menu item. The functions of audio input 1 and audio output 1 of the central control unit are the same in each audio routing mode. The signal on audio input 1 is always added to the floor signal. The signal on audio output 1 is always suitable to connect the system to an external public address system (for example, Praesideo).

### 12.6.2 Recorder

In the Recorder mode, audio output 2 of the central control unit transmits a signal that you can connect to an external audio recorder (refer to figure 12.1). The central control unit has no effect on the volume level of the signal.

In the Recorder mode, the signal on audio input 2 of the central control unit is added to the floor signal.

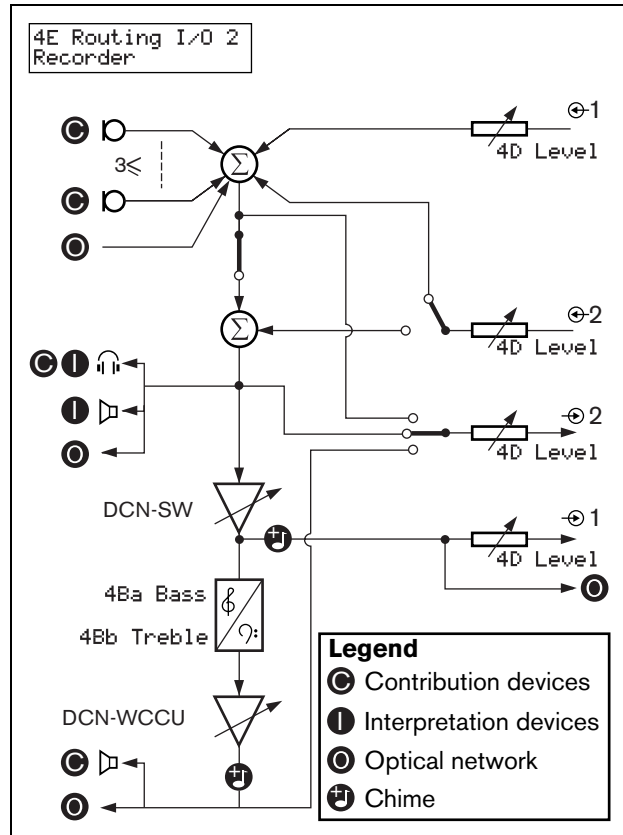


figure 12.1: Recorder



### 12.6.3 Equalized PA

In the Equalized PA mode, audio output 2 of the central control unit transmits a signal that you can connect to an external public address system (refer to figure 12.2).

The central control unit sets:

- The volume level of the signal
- The levels of the bass of the signal
- The level of the treble signal

In the Equalized PA mode, the signal on audio input 2 of the central control unit is added to the floor signal.

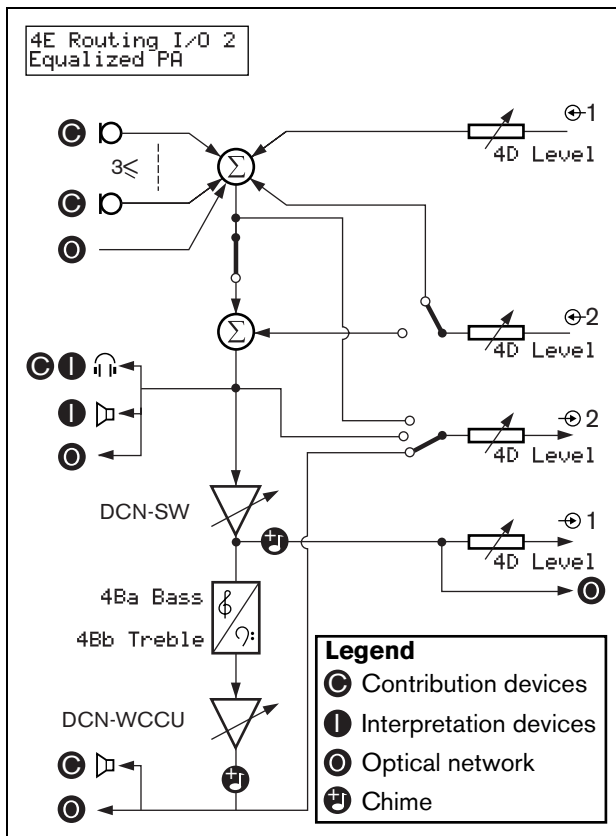


figure 12.2: Equalized PA

### 12.6.4 Insertion

In the Insertion mode, audio output 2 and audio input 2 of the central control unit are used to add signals from external audio devices (refer to figure 12.3). For example, you can connect an external audio mixer between audio output 2 and audio input 2 of the central control unit.

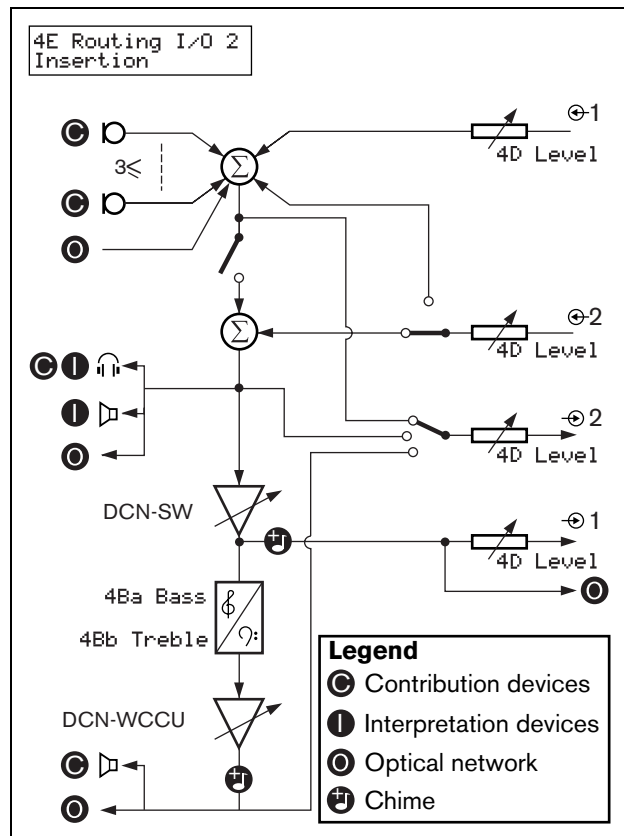


figure 12.3: Insertion

In the Insertion mode, you must install a device between audio output 2 and audio input 2 of the central control unit. When you do not install a device, the audio signals from contribution devices (floor) leave the system, but do not enter the system again.

### 12.6.5 Mix-minus

In the Mix-minus mode, audio output 2 and audio input 2 of the central control unit are used to connect 2 systems (refer to figure 12.4). Use the Mix-minus mode to connect the audio of two systems. The Mix-minus connection does not cause acoustic feedback.

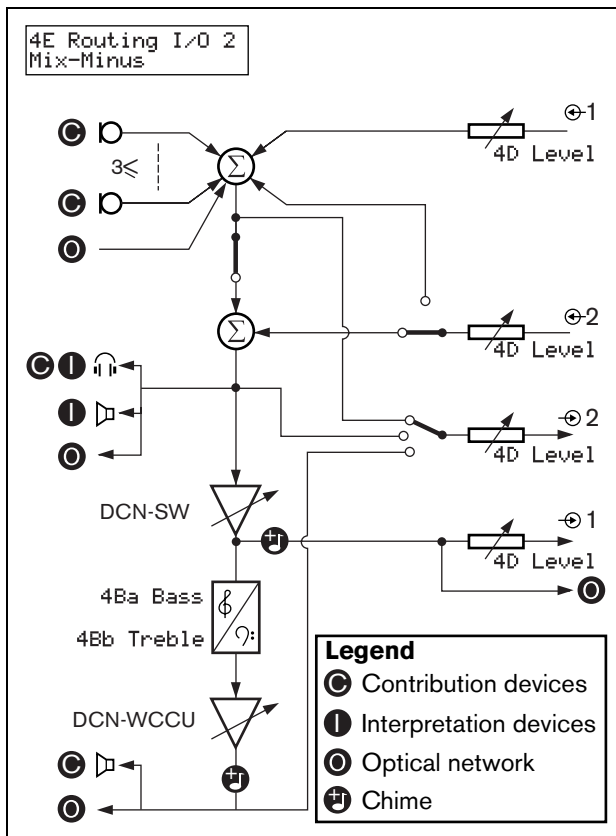


figure 12.4: Mix-minus

When you connect two systems:

- Go to menu item 4E Routing I/O 2 to set the systems in the Mix minus mode.
- Connect audio input 2 of the first system to audio output 2 of the second system.
- Connect audio output 2 of the first system to audio input 2 of the second system.



#### Note

When the distance between the two systems is great, you can use a telephone coupler to connect the two systems.

### 12.7 Attention chimes

The central control unit can play an attention chime when the chairman:

- Pushes the priority button on the chairman device.
- Starts a voting session.

You can enable or disable attention chimes with the 4F Att. Tones menu item (refer also to 10.6.8). There are 3 different attention chimes available.

### 12.8 Erase requests-to-speak and speakers

The central control unit can erase the requests-to-speak and speakers when the chairman pushes the priority button on the chairman device. You can enable or disable this function with the 4G Mic. Priority menu item (refer to 10.6.8).

- If you set the menu item to Permanently off, the system does not activate the microphones of the delegates again when the chairman releases the priority button. The requests-to-speak and speakers are erased.
- If you set the menu item to Temporarily off, the system activates the microphones of the delegates again when the chairman releases the priority button. The requests-to-speak and speakers are not erased.

### 12.9 Floor distribution

The central control unit can send the floor signal to all empty channels in the system. You can enable or disable this function with the 4I Floor Distr. menu item (refer to 10.6.8).

- If you set the menu item to Off, the central control unit does not send the floor signal to all empty signals in the system.
- If you set the menu item to On, the central control unit sends the floor signal to all empty channels in the system.

## 12.10 Intercom



### Note

You can make an intercom device with the DCN-DDI Dual Delegate Unit (refer to chapter ).

### 12.10.1 Introduction

To enable the intercom you must first identify the locations of the operator and the chairman.

### 12.10.2 Location of the operator

To identify the location of the operator:

- 1 Select the 4Ja Assign menu item of the configuration menu of the central control unit.

4Ja Assign  
Operator? No

- 2 Set the value of the parameter in the menu item to Yes. The display of the central control unit shows:

To Assign  
Lift Handset

- 3 Lift the receiver of the intercom handset of the operator to identify the location of the operator. When the central control unit identifies the location, the display of the central control unit shows:

Operator  
Assigned

### 12.10.3 Location of the chairman

To identify the location of the chairman:

- 1 Go to the 4Jb Assign menu item of the configuration menu of the central control unit.

4D Level  
Output 2 -18dB

- 2 Set the value of the parameter in the menu item to Yes. The display of the central control unit shows:

To Assign  
Lift Handset

- 3 Lift the receiver of the intercom handset of the chairman to identify the location of the chairman. When the central control unit identifies the location, the display of the central control unit shows:

Chairman  
Assigned

## 13 System operation

### 13.1 Start the system

Before starting the system, make sure:

- the system is correctly installed.
- the required number of wireless discussion units have been subscribed.

Do as follows:

- 1 Push the on/off switch on the central control unit. The display comes on. All devices in the DCN and optical network are activated.
  - 2 Install the battery packs in the wireless discussion units.
  - 3 Push the microphone buttons on the wireless discussion units to activate the wireless discussion units. The LED around the microphone button comes on as yellow for 250 milliseconds (if the software version of the wireless discussion unit is lower than 2.35, the LED around the microphone button comes on as green for 2 seconds).
- If all LEDs of the wireless discussion unit are off, the wireless discussion unit is activated, and ready to use.
  - If the LED around the microphone button stays on as yellow, and the indicator ring of the microphone comes on as red, the wireless discussion unit cannot find the subscribed wireless network. If the wireless network is found within 15 minutes, the wireless discussion unit connects. If not, the wireless discussion unit automatically deactivates (if the software version of the wireless discussion unit is lower than 2.35, the LED around the microphone button alternates red and yellow for 5 seconds to indicate that the wireless discussion unit cannot find the subscribed wireless network. If the wireless network is found within 5 seconds, the wireless discussion unit connects. If not, the wireless discussion unit automatically deactivates).
  - If you want to use the wireless discussion unit in a new system, but it is already subscribed to another system (see previous bullet point), you must first deinitialize the unit (refer to section 14.6.3). After the unit has been de-initialization it must be subscribed to the new system (refer to section 14.6.2).

### 13.2 Stop the system

Do as follows:

- 1 Select the 4A Wireless Mode menu item of the configuration menu of the central control unit.
- 2 Set the value of the parameter in the menu item to Off. All wireless discussion units are deactivated.
- 3 Push the on/off switch of the central control unit. The display goes off. All devices in the DCN and the optical network are deactivated.



#### Note

If necessary, charge the battery packs.

## Section 3 - Contribution Devices

## 14 DCN-WDU Wireless

### Discussion Units

#### 14.1 Introduction

With the wireless discussion units, the delegates and chairmen can make contributions to a discussion. The chairmen can also use their wireless discussion units to monitor and control a discussion.

#### 14.2 Controls, connectors and indicators

##### 14.2.1 Top

The top of the wireless discussion units (refer to figure 14.1) contains:

- 1 **Microphone socket** - Connects a DCN-MICL or DCN-MICS Pluggable Microphone to the wireless discussion unit (refer to chapter 15).
- 2 **Loudspeaker** - Gives the audio signal from the floor to the delegate or the chairman. When the microphone is activated, the signal of the loudspeaker is muted.
- 3 **Volume buttons** - Change the volume level of the signal that is sent to the headphones.
- 4 **Microphone buttons** - Activate or deactivate the microphone. Each microphone button has a LED that shows the condition of the microphone. The mode of the wireless discussion unit (refer to section 14.8.4) gives the type and number of microphone buttons that you must install in the wireless discussion unit.
- 5 **Voting buttons** - Operate the wireless discussion unit. Each voting button has a yellow LED.
- 6 **Channel selector display** - Shows the number of the channel and the abbreviation of the language that is sent to the headphones (refer to appendix B in the DCN Next Generation Installation and User Instructions). When the display shows FLR, the floor signal is sent to the headphones.



##### Note

You can change the type of language abbreviation with menu e of the installation menu of the interpreter desk (refer to Section 33 in the DCN Next Generation Installation and User Instructions).

- 7 **Channel selector buttons** - Select the channel that is sent to the headphones.

##### 14.2.2 Left and right sides

The left and right sides of the wireless discussion units (refer to figure 14.3) contain:

- 8 **Headphones socket** - Connect headphones to the wireless discussion unit (refer to section 14.7.1).

##### 14.2.3 Bottom side

The bottom side of the wireless discussion units (refer to figure 14.4 and figure 14.5) contains:

- 9 **Battery pack container** - Contains the DCN-WLION Battery Pack (refer to chapter 16).
- 10 **Configuration switches** - Configure the wireless discussion unit (refer to section 14.3) and set the mode of the wireless discussion unit (refer to section 14.4).
- 11 **De-init switch** - Erases the subscription from the wireless discussion unit (refer to section 12.2).
- 12 **Power supply socket** - Connects a DCN-WPS Power Supply Adapter to the wireless discussion unit.

##### 14.2.4 Rear side

The rear side of the wireless discussion units (refer to figure 14.6) contains:

- 13 **Status LEDs** - Give information about the condition of the wireless discussion unit (refer to section 14.8.6).

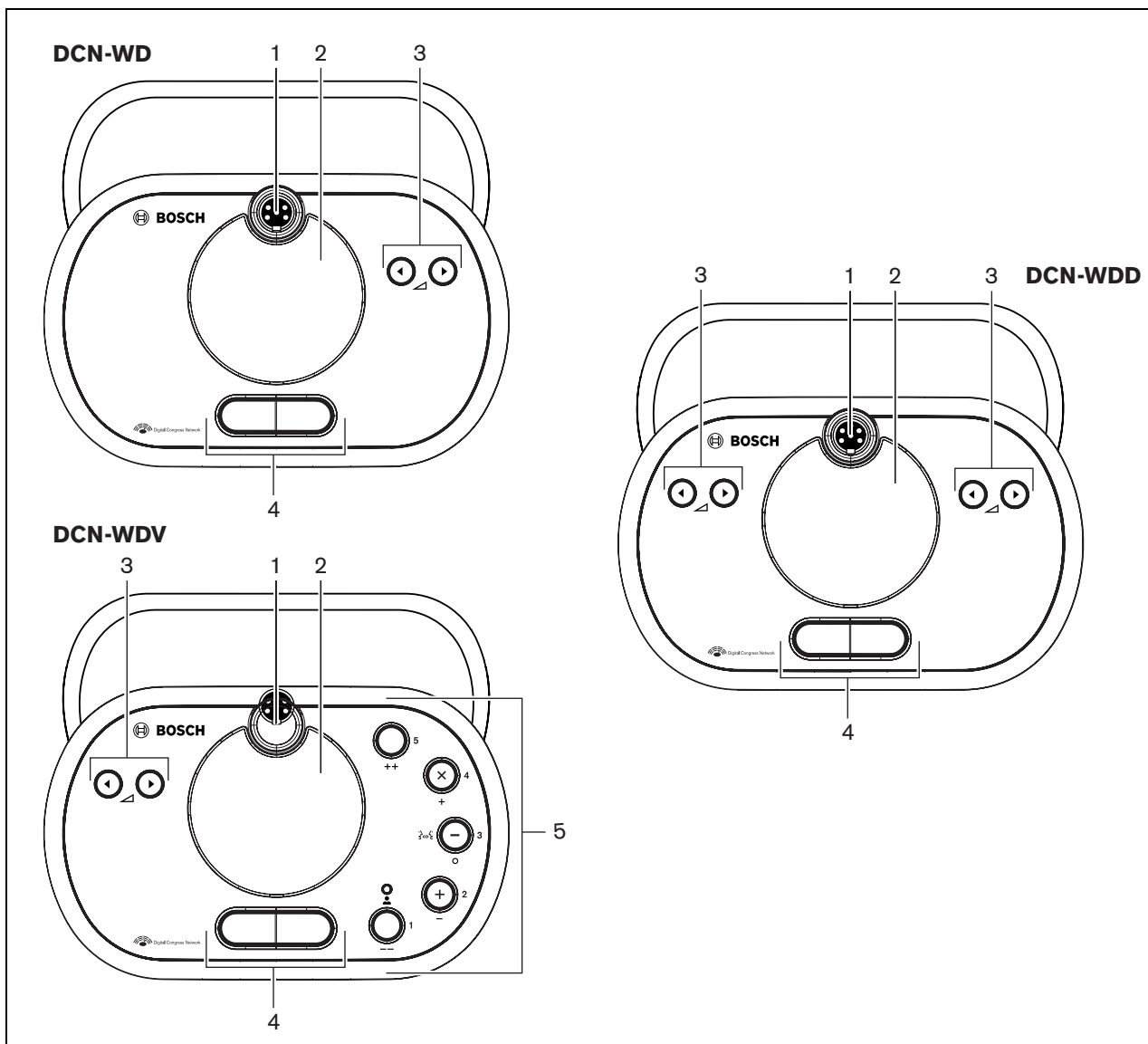


figure 14.1: Top views (1)

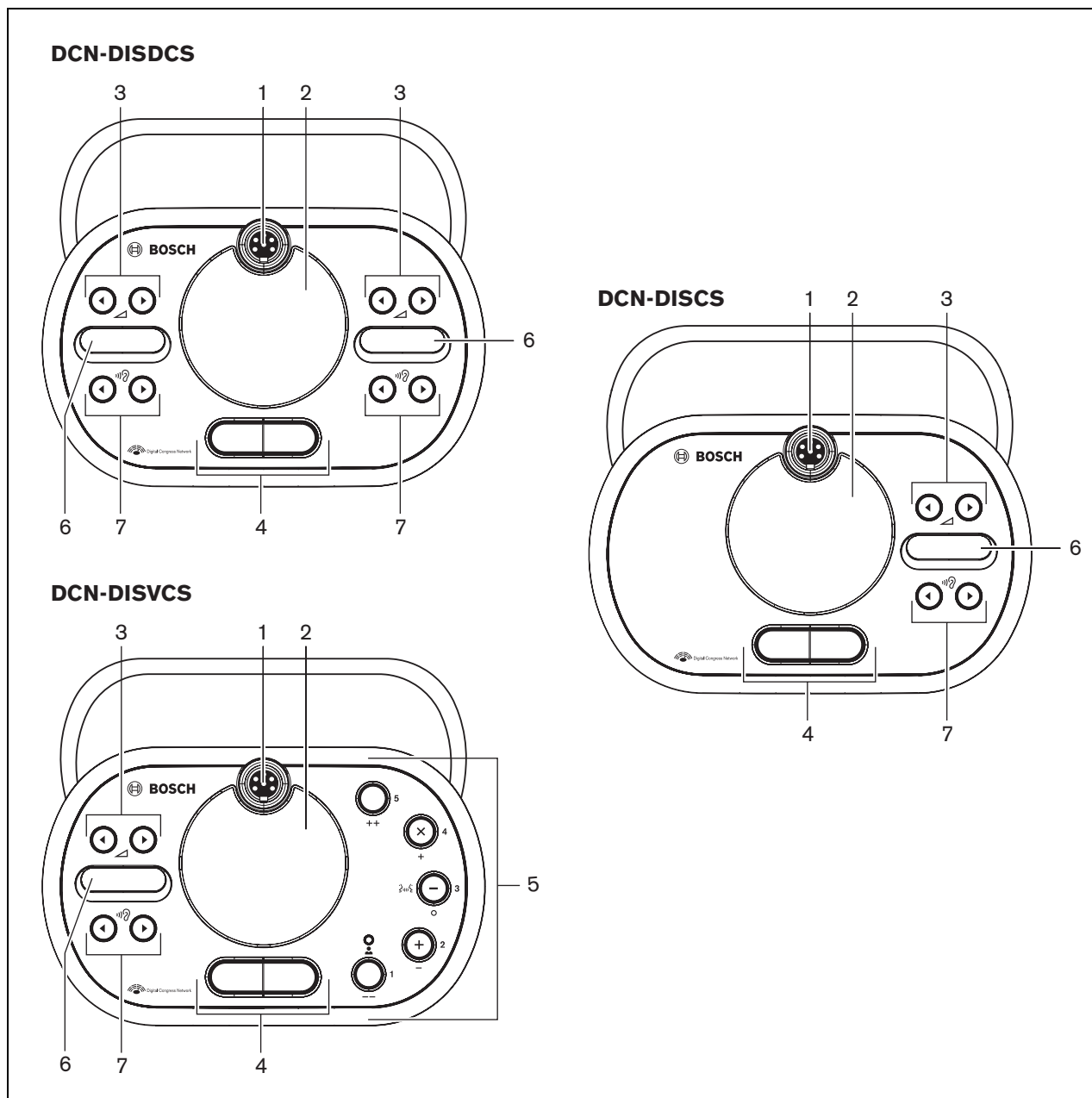


figure 14.2: Top views (2)



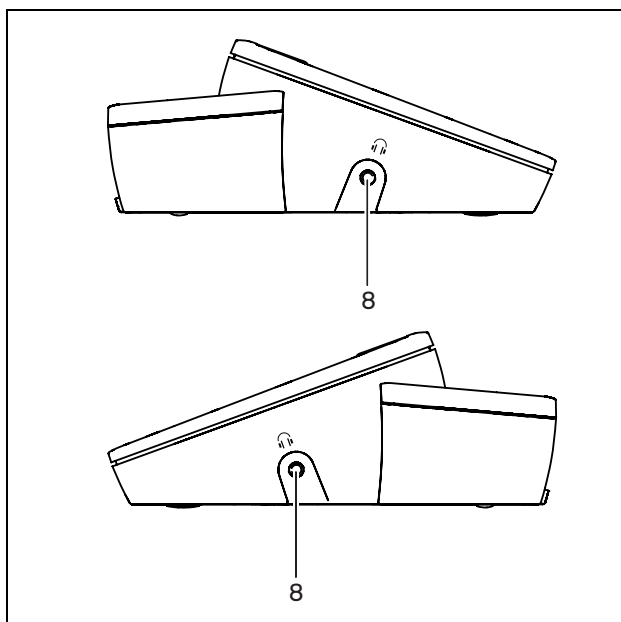


figure 14.3: Side views

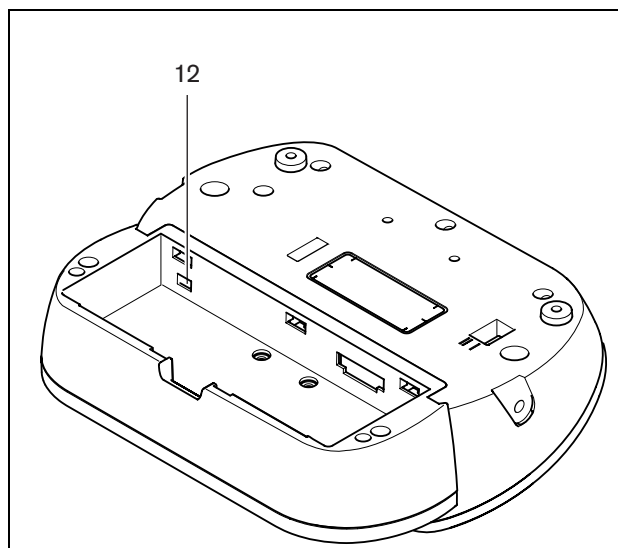


figure 14.5: Bottom view (2)

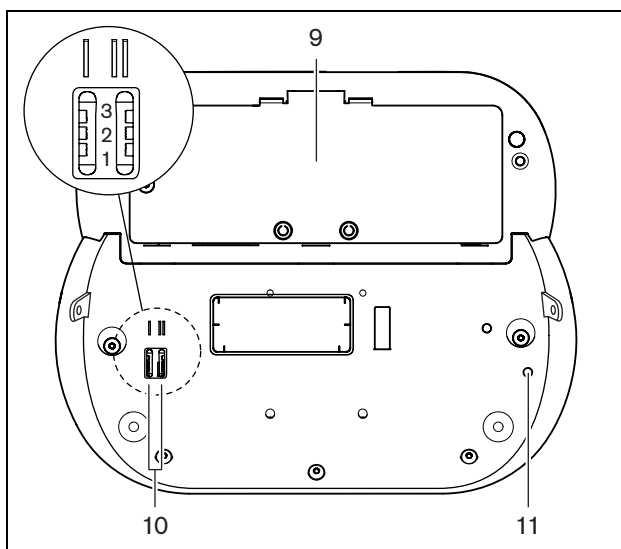


figure 14.4: Bottom view (1)

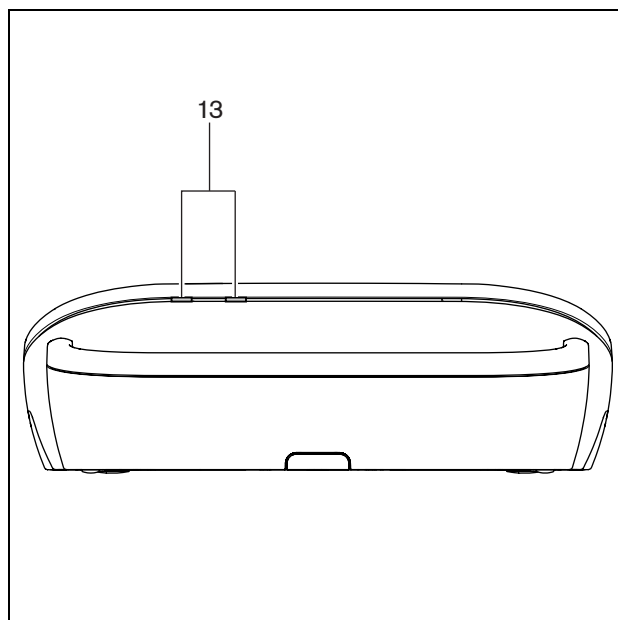


figure 14.6: Rear view

## 14.3 Internal settings

### 14.3.1 Introduction

With the configuration switches on the bottom of the wireless discussion unit (refer to figure 14.4, no. 10), you can configure the wireless discussion unit.



#### Note

The internal settings apply to the wireless discussion unit. When the wireless discussion unit is in the dual delegate mode (refer to section 14.4.5), the internal settings are the same for the two delegates.

table 14.1: Internal settings

I	II	Internal setting
2	1	Microphone sensitivity (refer to section 14.3.2). Default: 0 dB.
2	2	Channel/volume restore function (refer to section 14.3.3). Default: disabled.
2	3	Headphones level reduction (refer to section 14.3.4). Default: disabled.



#### Note

The central control unit does not keep the internal settings of the wireless discussion units. After you set the mode (refer to section 14.4), the wireless discussion unit keeps the internal settings.

### 14.3.2 Microphone sensitivity

When the configuration switches are in the correct position (refer to table 14.1), you can adjust the microphone sensitivity of the wireless discussion unit between -2 and 2 dB.

- To increase the microphone sensitivity with 0.5 dB, push the > volume button.
- To decrease the microphone sensitivity with -0.5 dB, push the < volume button.



#### Note

When the wireless discussion unit has two sets of volume buttons, configure the microphone sensitivity with the right set of volume buttons. The microphone sensitivity cannot be configured with the left set of volume buttons.

The LED around the microphone button shows the sensitivity (refer to table 14.2).

table 14.2: Microphone sensitivity

Microphone button LED	Sensitivity
Red	-2 dB
Off	-1.5 dB
Red/Yellow	-1 dB
Off	-0.5 dB
Yellow	0 dB
Green/Yellow	1 dB
Off	1.5 dB
Green	2 dB

### 14.3.3 Channel/volume restore function

When the configuration switches are in the correct position (refer to table 14.1), you can enable or disable the channel/volume restore function of the headphones connection of the wireless discussion unit.

- To enable the channel/volume restore function of the headphones, push the > volume button. (The LED around the microphone buttons come on as green.) When the wireless discussion unit is enabled, it automatically sets the last known volume and channel.
- To disable the channel/volume restore function of the headphones, push the < volume button. (The LED around the left microphone button comes on as red.) When the wireless discussion unit is enabled, it automatically sets the channel to floor, and the volume to -18 dB.



#### Note

When the wireless discussion unit has two sets of volume buttons, configure the channel/volume restore function with the right set of volume buttons. The channel/volume restore function cannot be configured with the left set of volume buttons.

For example, you can enable this function in discussions in which the delegates and chairmen always use the same wireless discussion unit.

### 14.3.4 Headphones level reduction

When the configuration switches are in the correct position (refer to table 14.1), you can enable or disable the headphones level reduction of the wireless discussion unit.

- To enable the headphones level reduction, push the > volume button. (The LED around the left microphone button comes on as green.) When the microphone is enabled, the headphones level reduction is 18 dB.



#### Note

When the wireless discussion unit is in the dual delegate mode (refer to section 14.4.5) and the headphones level reduction is enabled:

- The signal that is sent to the left headphones socket is decreased when the left microphone button is pushed. The signal that is sent to the right headphones socket is not decreased.
- The signal that is sent to the right headphones socket is decreased when the right microphone button is pushed. The signal that is sent to the left headphones socket is not decreased.

- To disable the headphones level reduction, push the < volume button. (The LED around the left microphone button comes on as red.) When the microphone is enabled, there is no headphones level reduction.



#### Note

When the wireless discussion unit has two sets of volume buttons, configure the headphones level reduction with the right set of volume buttons. The headphones level reduction function cannot be configured with the left set of volume buttons.

For example, you can enable this function to avoid acoustic feedback between the microphone and the headphones of the wireless discussion unit.

## 14.4 Modes

### 14.4.1 Overview

With the configuration switches on the bottom of the wireless discussion unit (refer to figure 14.4, no. 10), you can configure the mode of the wireless discussion unit. Each type of wireless discussion unit can operate in a number of modes (refer to table 14.3).

table 14.3: Modes

I	II	Mode
1	1	Single delegate (refer to section 14.4.3)
1	3	Chairman (refer to section 14.4.4)
3	1	Dual delegate (refer to section 14.4.5)
3	3	Single delegate with auxiliary control (refer to section 14.4.6)

### 14.4.2 Procedure

- 1 Remove the battery pack from the wireless discussion unit.



#### Note

When you do not remove the battery pack, you can cause an incorrect operation of the wireless discussion unit.

- 2 Change the mode of the wireless discussion unit (refer to table 14.3).
- 3 Re-install the battery pack in the wireless discussion unit (refer to section 14.5.3).

### 14.4.3 Single delegate

When the wireless discussion unit is in the single delegate mode, it is a delegate device for 1 delegate. You can put all types of wireless discussion units in the single delegate mode. When you put the wireless discussion unit in the single delegate mode, you must also install the default microphone button (refer to figure 14.7 and section 14.5.2).

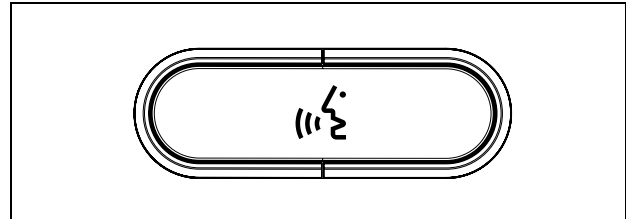


figure 14.7: Default microphone button



#### Note

All wireless discussion units are delivered with the default microphone button.

### 14.4.4 Chairman

When the wireless discussion unit is in the chairman mode, it is a chairman device for 1 chairman. You can put all types of wireless discussion units in the chairman mode. When you put the wireless discussion unit in the chairman mode, you must also install the DCN-DISBCM Buttons (refer to figure 14.8 and section 14.5.2).

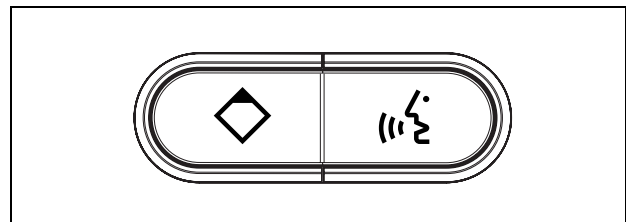


figure 14.8: DCN-DISBCM Buttons

The only difference between a delegate wireless discussion unit and a chairman wireless discussion unit is the priority button on the left of the microphone button. With the priority button, the chairman can deactivate the microphones of all delegate devices. At the same time, the priority button activates the microphone of the chairman. The system has the possibility to:

- Play an attention chime when the chairman pushes the priority button (refer to section 12.7).
- Erase the requests-to-speak and the speakers when the chairman pushes the priority button (refer to section 12.8).



#### Note

The DCN-DISBCM Buttons come with a tool that you can use to remove the old buttons from the wireless discussion unit (refer to figure 14.10).

### 14.4.5 Dual delegate

When the wireless discussion unit is in the dual delegate mode, it is a delegate device for 2 delegates. The system sees the wireless discussion unit as two separate devices, but it gives only one address to the wireless discussion unit. You can only put these types of wireless discussion units in the dual delegate mode.

- DCN-WDD
- DCN-WDDCS

When you put the wireless discussion unit in the dual delegate mode, you must also install the DCN-DISBDD Buttons (refer to figure 14.9 and section 14.5.2).

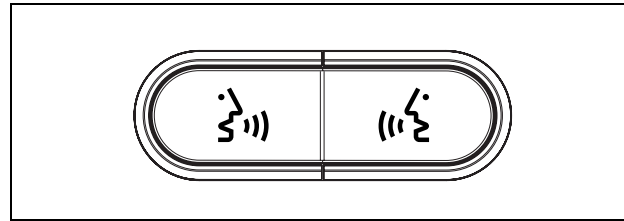


figure 14.9: DCN-DISBDD Buttons



#### Note

The DCN-DISBDD Buttons come with a tool that you can use to remove the old buttons from the wireless discussion unit (refer to figure 14.10).

### 14.4.6 Single delegate with auxiliary control

When the wireless discussion unit is in the single delegate with auxiliary control mode, it is a delegate device for 1 delegate. The delegate can use the left microphone button as an auxiliary button. For example, to activate an indicator.



#### Note

When the delegate pushes the auxiliary button, the auxiliary button makes an event. Use the Open Interface to program the actions that must be started by the event. Refer to the applicable Software User Manual for instructions that tell you how to program the Open Interface.

You can only put these types of wireless discussion units in the single delegate with auxiliary control mode:

- DCN-WDD
- DCN-WDDCS
- DCN-WDV
- DCN-WDVCS

When you put the wireless discussion unit in the single delegate with auxiliary control mode, you must also install two microphone buttons (refer to section 14.5.2).

For example, you can use the DCN-DISBCM Buttons (refer to figure 14.8).

## 14.5 Installation

### 14.5.1 General



#### Caution

Do not open the wireless discussion unit. Any hardware change makes the product certificates invalid. Only qualified personnel can open the wireless discussion unit.

table 14.4: Physical characteristics

<b>Dimensions (h x w x d):</b>
61 x 190 x 160 mm
<b>Weight:</b>
• DCN-WD: 0.485 g
• DCN-WDD: 0.500 kg
• DCN-WDV: 0.505 kg
• DCN-WDCS: 0.495 kg
• DCN-WDDCS: 0.515 kg
• DCN-WDVCS: 0.520 kg

### 14.5.2 Microphone buttons



#### Note

Before you install the microphone buttons, make sure that the wireless discussion unit operates correctly. Defective wireless discussion units are always replaced with a wireless discussion unit that contains the default microphone button (refer to figure 14.7).

The mode of the wireless discussion unit (refer to section 14.4) gives the type and number of microphone buttons that you must install in the wireless discussion unit.

Refer to figure 14.10 for instructions that tell you how to remove microphone buttons from a wireless discussion unit.

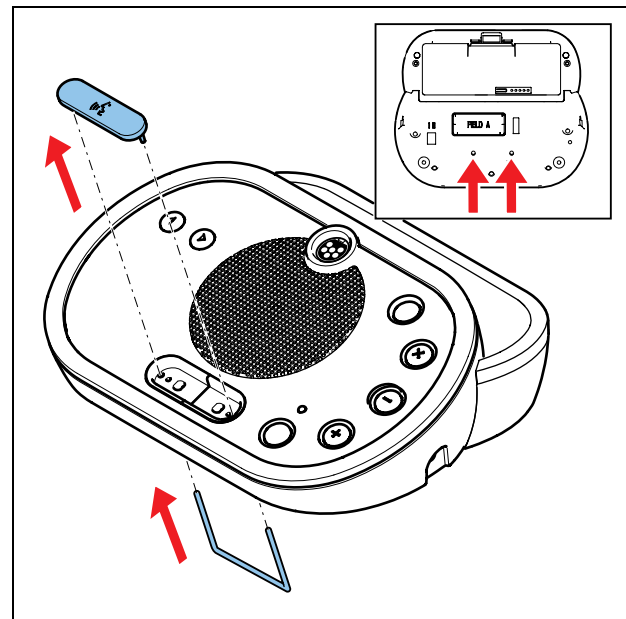


figure 14.10: Remove microphone buttons

Refer to figure 14.11 for instructions that tell you how to install microphone buttons in a wireless discussion unit.

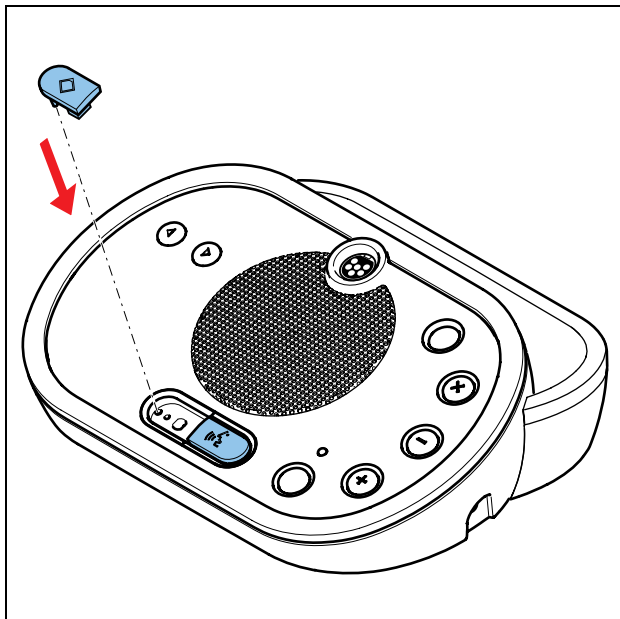


figure 14.11: Install microphone buttons

### 14.5.3 Battery

Refer to figure 14.12 for instructions that tell you how to install a DCN-WLION Battery Pack in the wireless discussion unit.

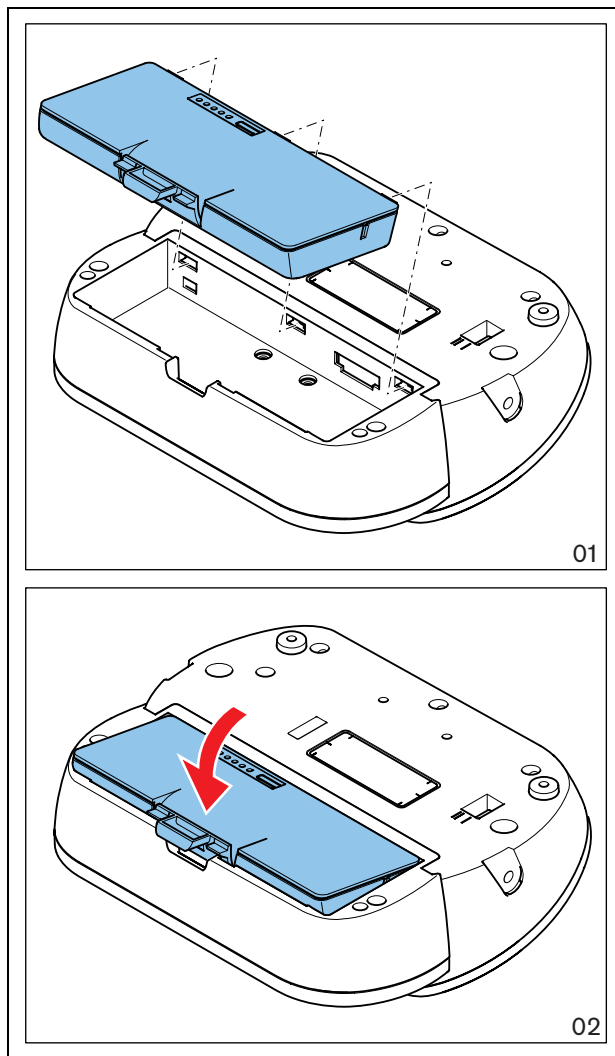


figure 14.12: Install a battery pack

## 14.5.4 Rims



### Note

Before you install the rim, make sure that the wireless discussion units operates correctly. Defective wireless discussion units are always replaced with a wireless discussion unit without a rim.

The wireless discussion units are delivered without rims. With the rims, you can change the look of the wireless discussion unit.

Refer to figure 14.13 for instructions that tell you how to attach a rim to a wireless discussion unit.



### Caution

Do not remove the rim from a wireless discussion unit. Only qualified personnel can remove rims from wireless discussion units.

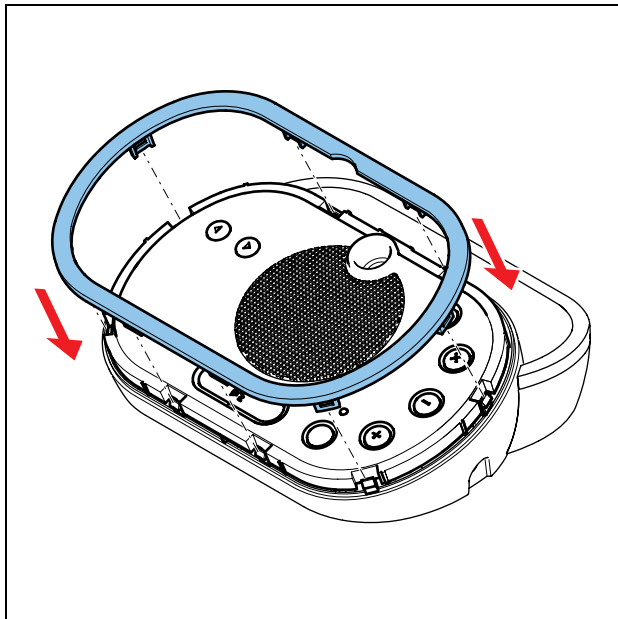


figure 14.13: Attach a rim

## 14.6 Subscription

### 14.6.1 Introduction

Each wireless discussion unit in the system must have a subscription. The central control unit cannot send data to a wireless discussion unit that does not have a subscription.



### Note

Refer to section 12.2 when the central control unit must give subscriptions to all wireless network devices.



## 14.6.2 Procedure

The procedure below is applicable for wireless discussion devices without a subscription. If the wireless discussion unit already has a subscription, first erase the subscription (refer to section 14.6.3).

Do as follows:

- 1 Set the wireless mode of the system to **Subscription** (refer to section 12.3.5).
  - 2 Insert charged batteries into the wireless discussion units.
  - 3 Push the microphone button of the wireless discussion unit. All LEDs of the wireless discussion unit come on and stay on, and the indicator ring of the microphone comes on as red.
  - 4 Push the microphone button of the wireless discussion unit for a second time. The unit will try to subscribe. If subscription is successful, all LEDs of the wireless discussion unit, and the indicator ring of the microphone go off (if the software version of the wireless discussion unit is lower than 2.35, all LEDs go off after 2 seconds, and the LED around the microphone is green for 5 seconds indicating that the subscription was successful. A second push on the microphone button, as required for units with software version 2.35 or higher, is not required).
- If after pushing the microphone button for a second time, all LEDs around the microphone button and the indicator ring of the microphone come on again, the wireless discussion unit is either not within range of the wireless network, or the wireless mode is not set to **Subscription** (if the software version of the wireless discussion unit is lower than 2.35, and after pushing the microphone button for the first time, the ring around the microphone button alternates red and green for 5 seconds, the unit is either: not within range of the wireless network, the wireless mode is not set to **Subscription**, or the language distribution is enabled). Refer to the note under Limit 4 in section 1.
  - If after pushing the microphone button for the first time, the ring around the microphone button is yellow for 250 milliseconds and then goes off, the wireless discussion unit was already subscribed to this system - you did not have to put the system in subscription mode. Instead switch on the unit as described in section 13.1 (if the software version of the wireless discussion unit is lower than 2.35, the ring around the microphone button is green for 2 seconds).
  - If after pushing the microphone button for the first time, the yellow LEDs around the microphone button, and the red indicator ring of the microphone are on, the wireless discussion unit is already subscribed to a system, but is not within range of this system. If the unit cannot find the system within 15 minutes, it will automatically switch off (if the software version of the wireless discussion unit is lower than 2.35, the ring around the microphone button alternates red and yellow for 5 seconds, and then the unit automatically switches off).
  - If after pushing the microphone button for the first time, the yellow LED comes on for 250 ms and the red microphone indicator comes on and stays on, the wireless discussion unit is already subscribed to the system, but another unit with the same address is already connected. To correct this, de-initialize the unit as described in section 14.6.3, or push the microphone button for a second time. The unit will then de-initialize. If the unit is in range of the wireless network and subscription is enabled, the unit will also subscribe (if the software version of the wireless discussion unit is lower than 2.35, the ring around the microphone button alternates red and yellow for 5 seconds, and then the unit automatically switches off. De-initialize the unit as described in section 14.6.3, and then subscribe the unit again).

### 14.6.3 Erase the subscription



#### Note

Do not push the de-init button with a sharp object.

Do as follows:

Push-and-hold the de-init button of the wireless discussion unit (refer to figure 14.4), and push the microphone button of the wireless discussion unit to switch it on (if the unit is already switched on, just push the de-init button).

All LEDs of the wireless discussion unit come on, and the LED around the microphone indicator ring comes on as red. The old subscription is erased, and the unit is ready for subscription (refer to section 14.6.2). If the software version of the wireless discussion unit is lower than 2.35, the LED around the microphone button comes on as yellow for 2 seconds.

## 14.7 External connections

### 14.7.1 Headphones

You can connect headphones to the headphones socket of the wireless discussion unit, the headphones must have a 3.5 mm plug (refer to figure 14.14).

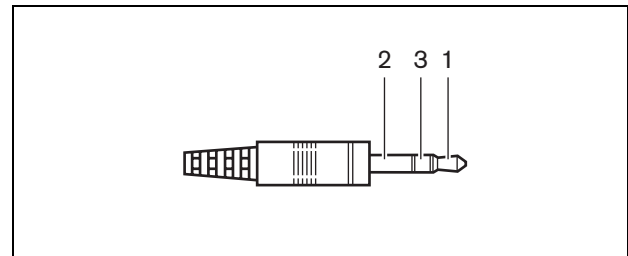


figure 14.14: 3.5 mm headphones plug, connection

table 14.5: 3.5 mm headphones plug, connection

Number	Signal
1	Left
2	Common
3	Right



#### Note

You can connect mono headphones to the wireless discussion unit.

table 14.6: Headphones sockets, details

<b>Number of connections:</b>
2x 3.5 mm socket
<b>Location:</b>
Right and left sides

### 14.7.2 External power supply

When you remove the battery pack from the wireless discussion unit, you can connect the wireless discussion unit to a DCN-WPS Power Supply Adapter (refer to figure 14.15).

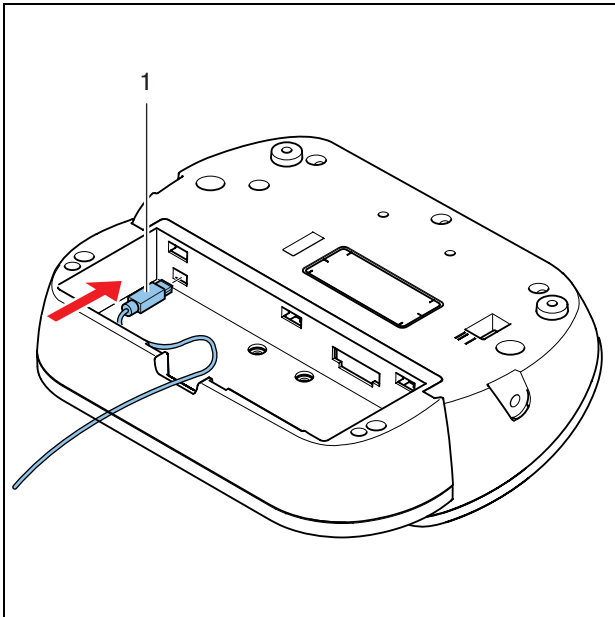


figure 14.15: Power supply socket, connection

table 14.7: Power supply socket, details

<b>Number of connections:</b>
1
<b>Location:</b>
In battery pack container

## 14.8 Operation

### 14.8.1 Activation

Before activating the units, make sure:

- The wireless discussion units are already subscribed to the system (refer to section 14.6.2).
- The system is switched on.
- The wireless discussion units are in range of the system.

Push the microphone button to activate the wireless discussion unit. The LED around the microphone button comes on as yellow for 250 milliseconds. The unit is now connected and can be used.

If the wireless discussion unit does not behave as described above, refer to section 14.6.2 (if the software version of the wireless discussion unit is lower than 2.35, the LED around the microphone button does not come on as yellow for 250 milliseconds; the indicator ring of the microphone comes on as green for 2 seconds).

### 14.8.2 Deactivation

Push and hold down the volume-down and volume-up buttons for 2 seconds.

### 14.8.3 Quick reference card



#### Note

Refer to the Quick Reference Card of the wireless discussion unit for instructions that tell you how to operate the wireless discussion unit.

### 14.8.4 Microphone

The colors of the LEDs of the microphone buttons show the condition of the microphone that is connected to the wireless discussion unit (refer to table 15.5).

table 14.8: Condition

Color	Condition
Red (on)	Microphone active
Red (flash)	Last minute of speech time
Green (on)	Request-to-speak
Green (flash)	First request

### 14.8.5 Attendance LED

table 14.9: Attendance LED

Attendance LED	Condition
Yellow (flashing)	The system requests attendance registration.
Yellow (on)	The attendance registration is confirmed.

### 14.8.6 Status LEDs

The status LEDs (refer to figure 14.6, no. 13) show the condition of the wireless discussion unit.

- If the yellow LED is on, the wireless discussion unit is out-of-range.
- If the red LED flashes, the battery pack of the wireless discussion unit will be empty within 1 hour.

If a wireless discussion unit is out of range for more than 15 minutes, it will automatically switch off.

### 14.8.7 Status channel selector display

If the wireless discussion unit has a channel selector display, additional icons show the condition of the unit (refer to figure 14.16):

- If the antenna icon is shown, the wireless discussion unit is out-of-range.
- If the battery icon is shown, the battery pack of the wireless discussion unit will be empty within 1 hour.

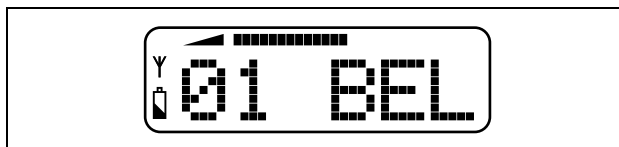


figure 14.16: Antenna and battery icon

If a wireless discussion unit is out of range for more than 15 minutes, it will automatically switch off.