



**BOSCH**

# DICENTIS

Wireless Conference System



en

Installation Manual

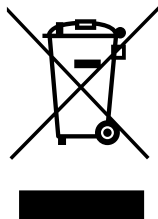


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# 1 Safety

Prior to installing or operating products, always read the Important Safety Instructions which are available as a separate multilingual document: Important Safety Instructions (Safety\_ML). These instructions are supplied together with all equipment that can be connected to the mains supply.



## Old electrical and electronic appliances

Electrical or electronic devices that are no longer serviceable must be collected separately and sent for environmentally compatible recycling (in accordance with the European Waste Electrical and Electronic Equipment Directive).

To dispose of old electrical or electronic devices, you should use the return and collection systems put in place in the country concerned.

## 1.1 Battery Pack

Please take notice of the safety instructions printed on the label of the Battery Pack (DCNM-WLIION).



### Warning!

DCNM-WLIION transportation

- Due to changed regulations the DCNM-WLIION can only be shipped by air when it is charged with a maximum of 30 %. When shipment by air is required, please make sure that only 1 LED on the battery is green.
- The battery can be discharged to show 1 active LED (<30%) by using the DCNM-WLIION in a Wireless device, in an active system.
- To avoid damage by deep-discharge, the batteries should be recharged right after transportation. Refer to *Battery Pack*, page 28.

## 1.2 Charger

The Charger (DCNM-WCH05) must be fixed installed to the wall by qualified service personnel, using the supplied mounting bracket. Disassembly is also only allowed by qualified service personnel.

## 1.3 Wireless Access Point

If you want to attach the Wireless Access Point (DCNM-WAP) to a wall, it must be correctly installed as described in this manual. Refer to *Installation Wireless Access Point*, page 19.

## 1.4 Frequency bands and power output specifications for European RED directive (2014/53/EU)

### System info

Frequency band	Power output
2400 - 2483.5 MHz	< 20 dBm
5150 - 5350 MHz	< 23 dBm
5470 - 5725 MHz	< 27 dBm

### DCNM-WDE

NFC Frequency band	Power limit
13.56 MHz	< 25 dBuA/m

## 1.5 Statements for FCC & Industry Canada

These notices and statements apply to:

- DCNM-WD
- DCNM-WDE
- DCNM-WAP



### Warning!

Changes or modifications made to this equipment, not expressly approved by Bosch Security Systems B.V. may void the user's authority to operate the equipment.

### FCC and IC Wireless Statement

This device complies with Part 15 of the FCC Rules and with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

- (1) l'appareil ne doit pas produire de brouillage, et
- (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.



### Notice!

The Wireless Devices and the Wireless Access Point comply with FCC radiation exposure limits set forth for an uncontrolled environment. The Wireless Devices and the Wireless Access Point should be installed and operated with minimum distance of 20 cm to your body. The RF-parts of the Wireless Devices

## 1.6 Statement for Brazil

"Este equipamento opera em caráter secundário, isto é, não tem direito a proteção contra interferência prejudicial, mesmo de estações do mesmo tipo, e não pode causar interferência a sistemas operando em caráter primário."

## 1.7 Statement for Mexico

“La operación de este equipo está sujeta a las siguientes dos condiciones:

(1) es posible que este equipo o dispositivo no cause interferencia perjudicial y

(2) este equipo o dispositivo debe aceptar cualquier interferencia, incluyendo la que pueda causar su operación no deseada.”

## 1.8 Local authority wireless approval

Although the DICENTIS Wireless Conference System operates in a license-free band, it is subject to local certification regulations. Please contact your nearest Bosch representative for more information on the regulations for your country.

## 2 About this manual

The purpose of this manual is to provide information required for installing the DICENTIS Wireless Conference System.

- Please read this manual carefully before installing any of the products of the DICENTIS Wireless Conference System.
- Retain all documentation supplied with the products for future reference.
- This installation manual is available as a digital document in the Adobe Portable Document Format (PDF).
- For more information, refer to the product related information on:  
[www.boschsecurity.com](http://www.boschsecurity.com) > *Country of your choice* > Conference Systems > DICENTIS Wireless Conference System

### 2.1 Intended audience

This hardware installation manual is intended for installers of a DICENTIS Wireless Conference System.

### 2.2 Alerts and notice signs

Four types of signs can be used in this manual. The type is closely related to the effect that may be caused if it is not observed. These signs - from least severe effect to most severe effect - are:

**Notice!**

Containing additional information. Usually, not observing a 'notice' does not result in damage to the equipment or personal injuries.

**Caution!**

The equipment or the property can be damaged, or persons can be lightly injured if the alert is not observed.

**Warning!**

The equipment or the property can be seriously damaged, or persons can be severely injured if the alert is not observed.

**Danger!**

Not observing the alert can lead to severe injuries or death.

### 2.3 Copyright and disclaimer

All rights reserved. No part of this document may be reproduced or transmitted in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. For information on getting permission for reprints and excerpts, contact Bosch Security Systems B.V..

The content and illustrations are subject to change without prior notice.

## 2.4 Document history

Release date	Documentation version	Reason
2015.02	V1.0	1st edition.
2015.03	V1.01	Section 6 adapted. Minor text changes in the whole document.
2016.07	V2.0	New sections: 1.2, 1.3, 1.5, 1.6, 4.2, 4.3, 10, 10.1. Sections shifted: 1.2 > 1.4, 4.2 > 4.4. Sections updated: 2.4, 3, 3.1, 4.4, 5, 6, 6.1, 6.2, 6.3, 9.2, 9.3.
2017.08	V2.1	New section: 1.4 Sections updated: 1.1, 1.7.
2018.09	V.2.2	Section 4 updated with new information on WAP positioning. Minor changes throughout the document about supported cameras.
2019.02	V2.3	Sections updated: <b>1.5 Statements for FCC &amp; Industry Canada</b> <b>6.2 Battery pack</b> with information on how to recover deep discharged batteries.



### 3 System overview

The DICENTIS Wireless Conference System is a “standalone” IP based system. It uses WiFi IEEE 802.11n for wireless distribution and processing of audio and data signals.

#### Typical DICENTIS Wireless Conference System

A typical DICENTIS Wireless Conference System (see following figure and numbering on next page) consists of:

- a Wireless Access Point (1), including the power supply adapter (2),
- Wireless Devices (4 + 5), including Battery Pack and microphone,
- a tablet device (7) for operational use, or
- a PC/laptop (8) for operational use, and licensing/updating the system software (if the PC is not required for operational use, it can be disconnected from the system after licensing/updating the system software).
- a Battery Pack Charger (6).

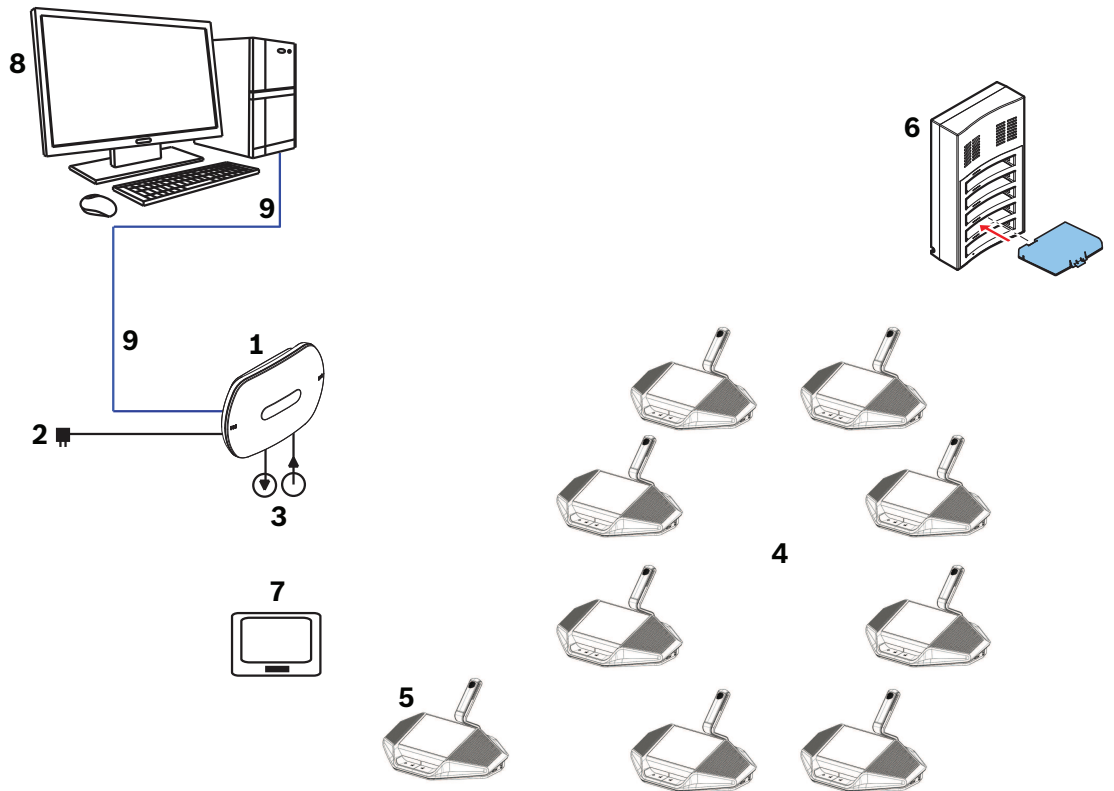
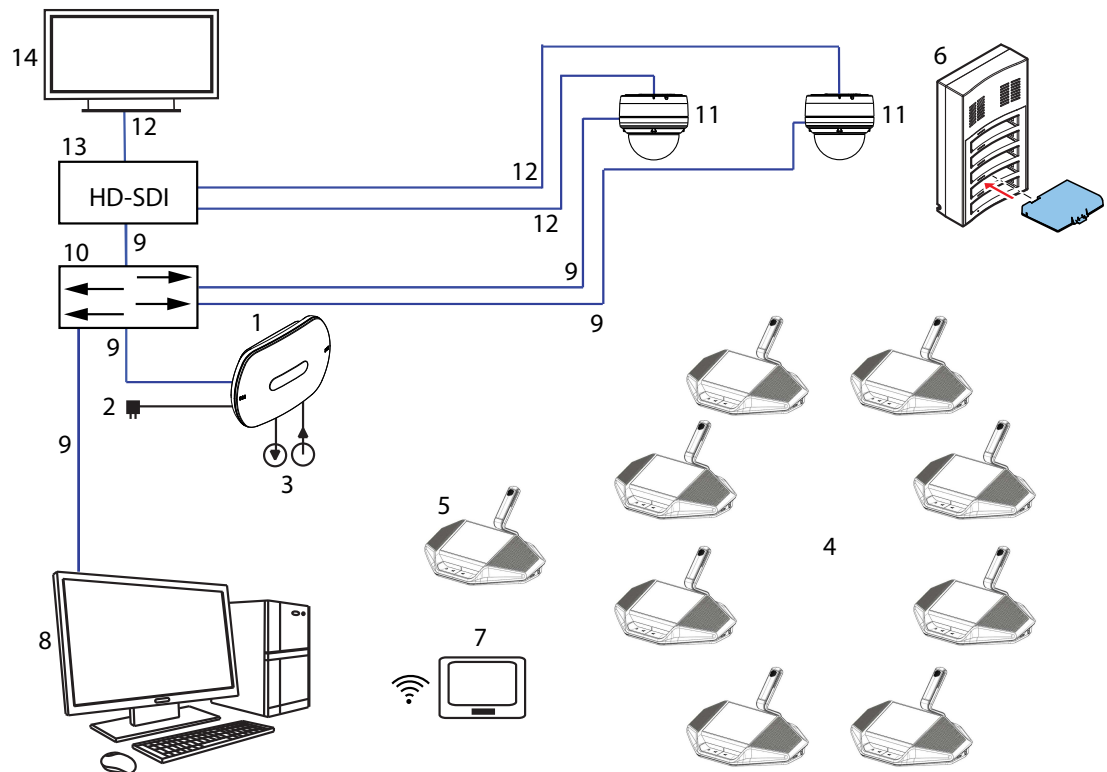


Figure 3.1: Typical DICENTIS Wireless Conference System

### Typical extended DICENTIS Wireless Conference System

A typical extended DICENTIS Wireless Conference System (see the following figure and numbering on the next page) has an additional Ethernet network switch/video switch (**10**) and HD Conference Dome (**11**).



**Figure 3.2: Typical extended DICENTIS Wireless Conference System**

1. The Wireless Access Point (DCNM-WAP) is the central component of the DICENTIS Wireless Conference System. It is used for:
  - hosting a web browser interface for licensing, configuring and controlling the system.
  - controlling the system audio, and routing the audio from and to the Wireless Devices.
  - environment wireless channel scanning. The best available wireless channel will be chosen for the system.
  - Camera control. It controls the optional connected switch (**10**) and cameras (**11**).

**Note:** If more than one camera is connected to the system, a video switch (**13**) is required.
2. AC/DC power supply adapter (supplied with the DCNM-WAP).
3. (Optional connections) Audio line input and audio line output.
4. Wireless Device (DCNM-WD): used as a single-use, dual-use or chairperson Wireless Device, including Battery Pack and microphone (both to be ordered separately).
  - Participants can use the Wireless Device to participate in a discussion.
5. Wireless Device Extended (DCNM-WDE): used as a single-use, dual-use or chairperson Wireless Device, extended with Near Field Communication (NFC) reader for user identification and 4.3" capacitive touch screen, including Battery Pack and microphone (both to be ordered separately).
  - Participants can use the Wireless Device Extended to participate in a discussion.
6. Charger (DCNM-WCH05): used to charge the Battery Packs of the Wireless Devices.
7. Tablet device:

- Used to configure and control the system via the website hosted on the DCNM-WAP.
- 8. PC/Laptop:
  - Used to configure and control the system if a tablet is not used.
  - Used to license and update the systems firmware, as required.
- 9. Ethernet cable/PoE:
  - Used for connection to the Ethernet.
  - PoE is used for powering the DCNM-WAP.
- 10. Ethernet network switch:
  - Routes the system data via Ethernet.
- 11. Optional camera:
  - Captures the video of a speaking participant.
- 12. Coax cable: transports the signal between the camera and the video switch (13).
- 13. Video switch:
  - TV-One CORIOmatrix mini and the Kramer MV-6 are supported.
  - Connected between the display (14) with the Ethernet network switch (10).
- 14. Display: Shows the speaking participant.

#### **DICENTIS Wireless Conference System with redundant WAP**

The system can be configured with a redundant DCNM-WAP provided the following conditions are met. The procedure for subscribing a redundant DCNM-WAP is described in the *Configuration manual*.

- Preferably both WAPs are connected to an Ethernet network switch with a DCN multimedia System Network Cable or a standard network cable, and the Ethernet network switch is connected to a laptop or PC.
  - Note:** The use of an Ethernet network switch and cabling are preferred during the subscription process, because this makes it easier to access and subscribe the WAPs. When subscription of the secondary WAP is complete, the Ethernet network switch and cabling can be removed if it is no longer required.
- The WAPs are correctly positioned (there should be a minimum distance of one meter and a maximum distance of three meters between the two WAPs).
- The WAPs are powered up and the Wireless Conference System is operational.
- Both WAPs have been correctly configured in the Installation Wizard and have unique names for:
  - Network name (SSID)
  - WPA2 key
  - Hostname
- Both WAPs are set to the **Standalone** (factory default).
- The applicable licenses are available for the primary WAP and the secondary WAP (the redundant WAP requires its own set of licenses for features such as voting and dual-use at seat to continue working if the primary WAP fails).
- If recording/playback and PA are required, make sure audio connectors are connected to the balanced In/Out connectors of both the primary and secondary WAP.
- If access to the API (for showing voting results) and web browser settings is required, make sure Ethernet cables are connected to both the primary and secondary WAP.

## 3.1 Extended system requirements

The following requirements are valid if you want to extend your system with a network switch or cameras:

### Ethernet network switch

The DICENTIS Wireless Conference System uses the Precision Time Protocol (PTP) to synchronize network clocks. In a network, there can only be one PTP master. Devices using PTP negotiate automatically which one becomes the master. So the DCNM-WAP, as a PTP slave, can be connected to PTP master via an Ethernet switch. It is known that switches with an active green-mode (power saving) might delay the PTP synchronization, which results in audio mutes of the wireless devices.

### Video switch

A video switch is required when more than one camera is used. The following switches are supported:

- tvONE CORIOmaster mini C3-510
- Kramer MV-6 3G HD-SDI Multiviewer

### DHCP server

A DHCP server is needed for both the Wireless Access Point and the cameras.

### Cameras

The following cameras are supported:

- Bosch HD Conference Dome (Refer to product related information on: [www.boschsecurity.com](http://www.boschsecurity.com) > *Country of your choice* > Conference Systems > DICENTIS Wireless Conference System > HD cameras and accessories)
- Onvif Profile-S compatible cameras, tested with Bosch IP4000 and IP5000 and Lumens VC-A50P.
- Support for Sony IP cameras via CGI commands for 300/360 series: Sony SRG-300SE/301SE and SRG-360SHE.
- Support for Panasonic IP cameras via CGI protocol (HD Integrated Camera Interface Specifications 1.06): AW-HE40, AW-HE50, AW-HE60, AW-HE120, AW-HE130, and AW-UE70.

### Browser requirements

- Firefox 11
- Chrome
- Internet Explorer
- Opera



### Notice!

Network and video switch and camera installation instructions are not part of this installation manual.

Please consult the product related documentation of the supplier

# 4 Planning

Use the guidelines in this section to plan the design and installation of your DICENTIS Wireless Conference System.

## 4.1 Unpacking

This equipment should be unpacked and handled with care. If an item appears to be damaged, notify the shipper immediately. If any items are missing, notify your Bosch representative. The original packaging is the safest container in which to transport products and can be used to return products for service if necessary.

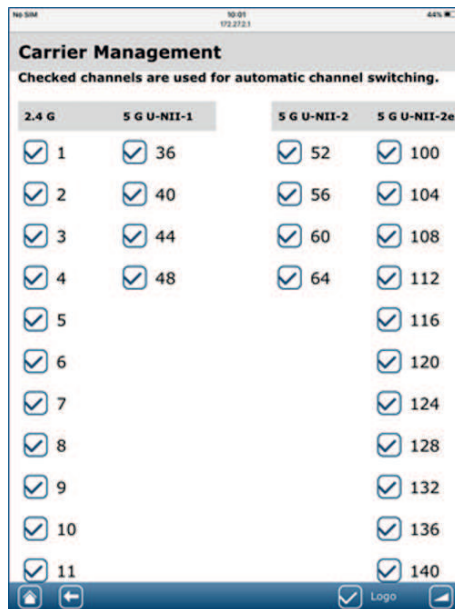
## 4.2 System design planning

This section will advise you on how to plan the installation and management of your system, including the optimal positioning of your Wireless Access Point, to ensure a seamless operation of all devices.

### 4.2.1 Planning and management

#### Introduction

The DICENTIS system uses the Dynamic Frequency Selection (DFS) technology to select the best possible Wi-Fi channel. The number of Wi-Fi channels depend on the country where the system is used. The channels are defined automatically according to the country selected in the setup-wizard.



The system uses 2.4 GHz and 5G Hz Wi-Fi channels.

The 5 GHz band consists of several frequency bands: U-NII-1, U-NII-2, U-NII-3 and ISM. Channels in the U-NII-1, U-NII-3 and ISM bands are also called non-DFS channels, while channels in the U-NII-2 band are called DFS channels. The use of DFS channels needs special care, since these channels can be used by radar systems such as weather radar systems. Before a DFS channel can be used, the wireless system needs to listen to this channel for at least 60 seconds. This is to ensure that the channel is not used by any radar signal. When the DFS channel is free, it can be used by the wireless system.

From this moment onwards the wireless system needs to monitor this selected DFS channel to ensure that it is not used by a radar system. If a radar system is detected, the wireless system is not allowed to use this channel anymore and needs to move to another channel. Often this new channel is a non-DFS channel, since switching to another DFS channel requires the 60 seconds listening period before it can be used.

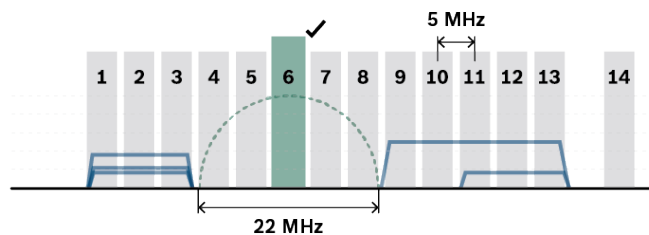
Frequency planning should be used when the DICENTIS Wireless Conference System is used in an area where other WiFi systems are active.

1. There should be at least 2 (more is better) free Wi-Fi channels available.

One of the channels must be of the following type:

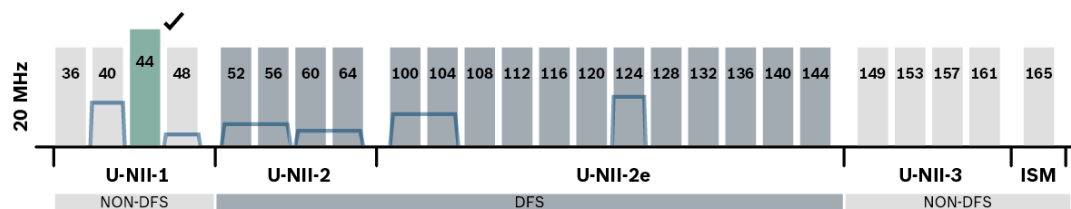
- a non-overlapping 2.4 GHz channel. Non-overlapping means the channel itself is free and unused and the 2 adjacent side channels are also free and unused:

### 2.4 GHz



- a non-DFS channel from the 5 GHz U-NII-1 band (channel 36, 40, 44, 48):

### 5 GHz



1. There are several tools available that allow you to check the current channel usage (e.g. Acrylic Wi-Fi for Windows, NetSpot for MacOS, Wifi Analyser for Android). However, when using these tools:
  - Be aware that they only provide a snapshot for that moment and the situation can change over time.
  - The scan is only valid for that specific location, so check multiple positions in the meeting room.
  - Only the network presence is shown, not the data intensity in the channels.
  - Check if there are WiFi networks that belong to the venue.
2. When other WiFi devices (such as smartphones or tablets) try to connect to the DICENTIS Wireless Conference System they can interfere with the proper operation of the DICENTIS system. Therefore it is strongly recommended to provide an additional 3<sup>rd</sup> party WiFi access point for these WiFi devices to connect to. Make sure that this additional access point has been included in the WiFi frequency planning, so it does not use the same WiFi channels as the Wireless Conference System.

3. Try to achieve the situation mentioned above with a non-overlapping channel in 2.4 GHz or a non-DFS channel in 5 GHz:
  - This has to be done together with the IT partner of the venue.
  - There are also WiFi systems in the market that can check on the presence of other networks and avoid the channels on which these are present.

These type of features are brand specific implementations and are not defined in any standard. Check with the IT partner if the WiFi system has such capabilities when channel management is not an option.

1. The maximum distance between the DCNM-WAP and the Wireless Devices can be reduced by RF absorbance of signal radiation of certain building materials, e.g. concrete and/or metal, or by reflection of the wireless signal by materials like metal walls and mirrors.
2. When a control device is connected wirelessly to the DICENTIS system, the maximum number of connected Wireless Devices must be reduced. With 1 wireless control device, 119 Wireless Devices can be used. Up to 3 wireless control devices can be used, controlling 117 Wireless Devices. To maintain the maximum number of 120 Wireless Devices, use a wired connection to the DCNM-WAP.

**DICENTIS and the use of the REST API:**

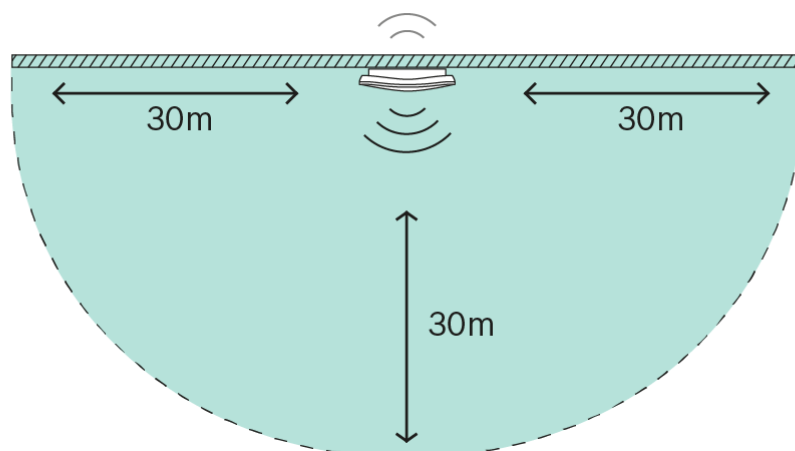
- It is recommended not to use wireless connectivity for 3<sup>rd</sup> party REST API usage.
- REST API data traffic will be distributed on the same channel as the audio.
- It is preferable to use the long-polling method. Do not use the normal polling method as this generates a lot of traffic, which might decrease the performance of the wireless connection.

**4.2.2**

**Coverage area**

All Wireless Devices need to be in the Wi-Fi coverage area of the DCNM-WAP.

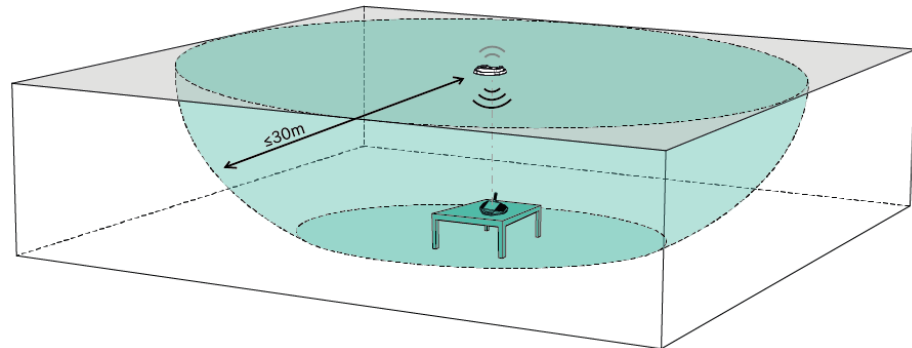
- For a maximum Wi-Fi coverage area, the DCNM-WAP should be placed on a central location in the room.
- The DCNM-WAP has a typical Wi-Fi coverage distance of **30 m**.



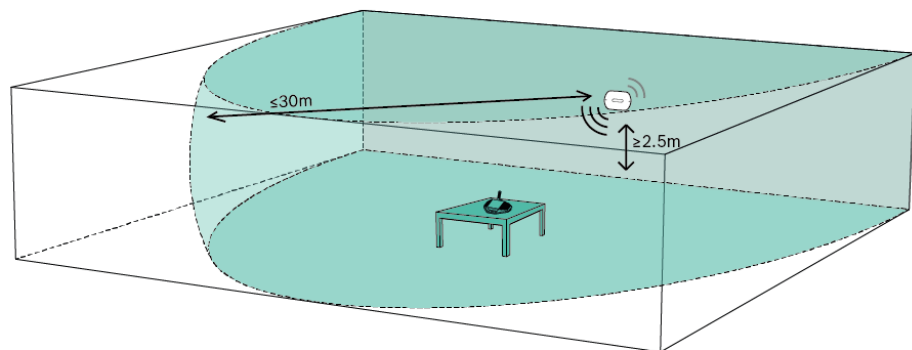
**Notice!**

30 meters is the maximum distance if there is a direct line of sight. Obstacles between the Wireless Access Point and the devices will reduce this distance.

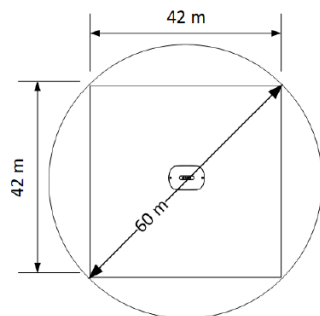
**Preferred location: on the ceiling**



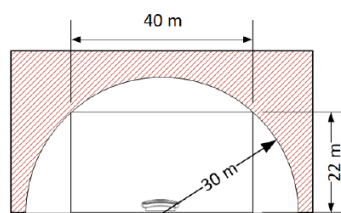
**Next preferred location: along the longest wall**



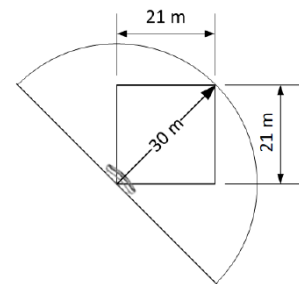
**Wireless Access Point location examples**



DCNM-WAP  
Ceiling position



DCNM-WAP  
Wall position



DCNM-WAP  
Corner position



**Notice!**

The Wireless Access Point is designed in such a way that reception from the back of the device is poor.

Nevertheless, it still may interfere other wireless systems.

**Testing**

Execute a range test once the complete system is installed, configured and set-up, and make sure that the test result is marked with a check mark for every seat.

Problem free operation can't be guaranteed for a seat marked with an X. Please refer to the DICENTIS Wireless Conference System *Configuration manual* for more information.

## 4.3

### Installation planning

1. Make sure you have all components for installing and connecting the DICENTIS Wireless Conference System (see *System overview, page 9*).
  - Familiarize yourself with the products capabilities of the DICENTIS Wireless Conference System (see *System overview, page 9* and the paragraphs *Control capacity* and *Coverage area* in this section).
  - Use only Bosch specified installation materials and tools (see *Additional components, page 18*).
2. Determine the end-user requirements, typical questions are:
  - The number of seats?
  - How many chairpersons are required?
  - Should the Wireless Devices be in dual-use mode?
  - Is voting required?
  - Is identification required?
  - Is camera control required?
3. Calculate the number of seat positions. This depends on, the number of participants, the number of chairpersons and whether the Wireless Devices will be in single-use or dual-use.
  - **Example:** The system requires 25 participants and one chairperson. Two participants will use one Wireless Devices. Use the following formula to calculate how many devices are required: Round up (participants/2) + chairperson.  
In this example  $25/2 = 12.5 > \text{Round up } (12.5) = 13 + 1 = 14$  Wireless Devices.
4. If camera control is a required, the license DCNM-LCC must be added to the system. Do not forget to add the cameras to the system.
5. Decide if, and which type of, cabling is required. See *System overview, page 9*.
6. Decide on how to power the Wireless Access Point (DCNM-WAP). See *System overview, page 9*:
  - Via the AC/DC power supply adapter (supplied with the DCNM-WAP). Or:
  - Via Power over Ethernet (PoE). Or:
  - Via Ethernet switch. Or:
  - DICENTIS (Audio) Powering Switch.
7. Provide a mains power supply connections nearby the equipment which requires mains power supply.
8. Decide on how to power the other devices used in the system (i.e. Ethernet switch, cameras etc.). See *System overview, page 9*:
  - Via their own (mains) power supply provision. Or:

- Via Power over Ethernet (PoE), if possible.
- 9. Decide on how, and where, to install the Wireless Access Point (DCNM-WAP). See *Installation Wireless Access Point, page 19*:
  - Wall, ceiling. Or:
  - Tripod floor stand.
- 10. Decide where, and how to place, the Wireless Devices (DCNM-WD and/or DCNM-WDE). See *Installation Wireless Devices and Accessories, page 25*.
- 11. Decide on how, and where to attach the Charger to a wall. See *Charger, page 31*.

**Control capacity**

- The Wireless Access Point (DCNM-WAP) can control a maximum of 120 wireless connections. A wireless connection can be:
  - a Wireless Device (DCNM-WD or DCNM-WDE), or
  - a wireless device with web browsing functionality, such as a tablet or laptop.
- A maximum of one DCNM-WAP can be used to control the system.

**802.11n specification**

The DICENTIS Wireless Conference System network is based on the 802.11n specification for WiFi technology. Devices that comply to the 802.11n specification operate in frequency bands between 2.4000 and 2.4835 GHz and 5.180 and 5.700 GHz.

**Notice!**

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

## 4.4 Additional components

The following additional components can be used with the DICENTIS Wireless Conference System, as required:

**6.3 mm jack cables** – These cables are required if you want to connect optional audio equipment to the audio line input and/or audio line output of the Wireless Access Point (DCNM-WAP), such as microphones and a sound reinforcement system.

**CAT5e cables** - These cables are required if you want to connect a PC/Laptop to the Wireless Access Point (DCNM-WAP) for running the web browser interface and connecting a switch and HD Conference Domes.

# 5 Installation Wireless Access Point

Use the following steps to install the Wireless Access Point (DCNM-WAP).

1. Make sure all equipment is available as described in **Delivered with product**.
2. Optionally, set the “Brand logo” in the correct orientation.
3. Connect the cabling and install the Wireless Access Point to the wall/ceiling or tripod floor stand. Refer to *System design planning, page 13* for more information on the correct positioning of the DCNM-WAP
4. Power on the Wireless Access Point.
5. Execute a range test once the complete system is installed, configured and set-up. Refer to the DICENTIS Wireless Conference System *Configuration manual* for more information.

### Delivered with product

The Wireless Access Point (DCNM-WAP) is shipped with the following parts:

Quantity	Component
1	DCNM-WAP Wireless Access Point
1	AC/DC power supply adapter. Including: AC plug-AU, AC plug-UK, AC plug-EU, AC plug-US, GE24I48-R7B
1	Mounting bracket
1	DVD with manuals and software
1	Safety instructions

### Brand logo

The orientation of the logo could be changed.

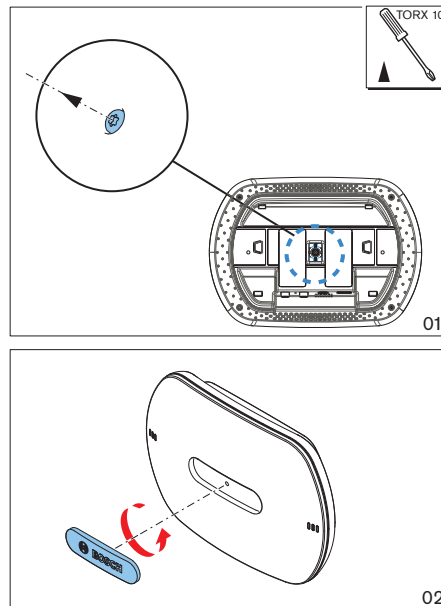


Figure 5.1: Change logo orientation

### Cabling and wall/ceiling/tripod floor stand installation

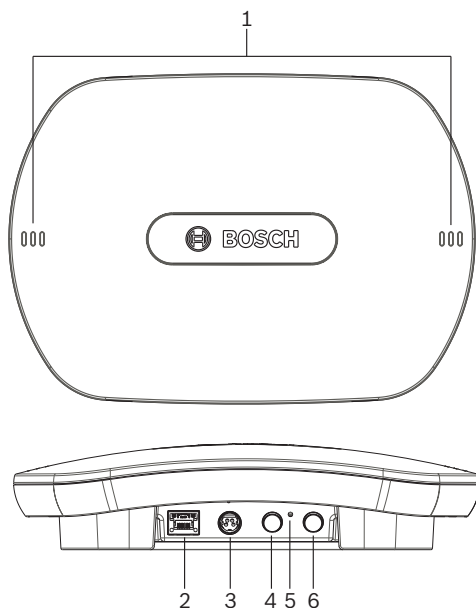
The Wireless Access Point is provided to be installed to a wall, a ceiling or on a tripod floor stand. Take care of the installation location regarding the wireless signal coverage area between the Wireless Access Point and the Wireless Devices. See *Planning*, page 13.



#### Caution!

Do not open the Wireless Access Point. Any hardware change makes the product certificates invalid. Only qualified personnel may open the Wireless Access Point.

#### Cable connections:



**Figure 5.2: DCCM-WAP front and bottom view**

1. Connect an external balanced audio line input (**4**), if required.
2. Connect the balanced audio line output (**6**) to an external audio system, if required.
3. Connect the Ethernet (PoE) (**2**) or AC/DC power supply adapter (**3**).

For detailed connection description, see the “Power on / connection and indicator” paragraph at the end of this section.

**Wall or ceiling installation**

Use the mounting bracket to attach the Wireless Access Point to a wall or ceiling.

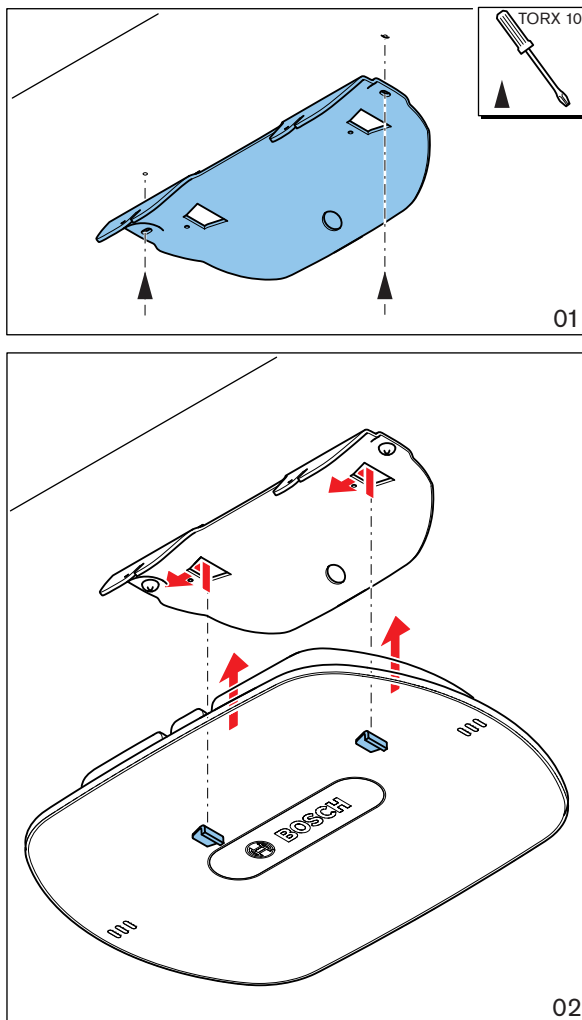


Figure 5.3: Mounting to a wall or ceiling

### Tripod floor stand installation

Use the mounting bracket to install the Wireless Access Point on a Bosch LBC1259/01 universal tripod floor stand.

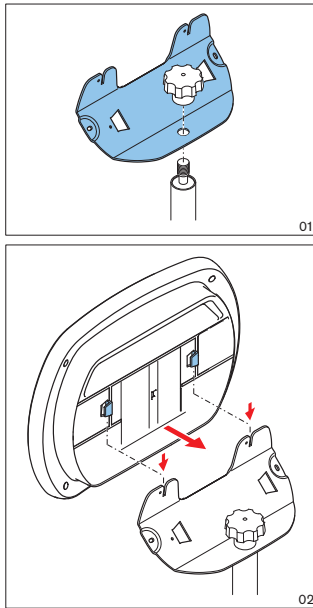


Figure 5.4: Mounting on a tripod floor stand

**4) Power on / connections and indicators**

The DCNM-WAP is powered via one of the three power supply sources marked with an \* in the table below. As soon the power supply is provided, the Wireless Access Point is powered on, and the six LEDs (1) on the front side are all on.

- To configure the DCNM-WAP, refer to the configuration manual of the DICENTIS Wireless Conference System.

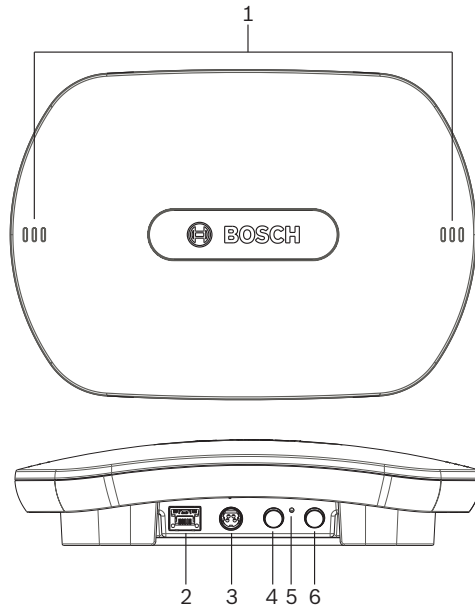


Figure 5.5: DCNM-WAP front and bottom view

Item	Description
1	<b>2x 3 status LED:</b> Gives detailed information about the condition of the Wireless Access Point and the wireless network. Refer to the software configuration manual of the DICENTIS Wireless Conference System.
2	<b>Network / DCN multimedia / PoE socket.</b> Powered with: <ul style="list-style-type: none"> <li>- * <b>DCN multimedia System Network Cable (48VDC) from DCNM-(A)PS, or:</b></li> <li>- * <b>Standard Power over Ethernet cable (POE 802.3at Type1)</b>”.</li> <li>- Also standard Ethernet cable can be used (e.g. for camera or wired connection with PC/Laptop).</li> </ul> Connects the Wireless Access Point point to the wired Ethernet network. For DCN multimedia System Network Cable, see <i>Additional components, page 18</i> .
3	- * <b>AC/DC power supply 48VDC socket</b> (Power supply adapter supplied with the DCNM-WAP).
4	<b>Balanced audio line output socket:</b> Connection to a public address system, audio mixers or to a voice logging system for audio registration of all spoken conference proceedings. Use standard line output cabling. 6.3mm (1/4") jacks with the following pinning: Tip: Live (+) Ring: Return (-) Sleeve: Shield
6	<b>Balanced audio line input socket:</b> Connection from audio source. Use standard line output cabling. 6.3 mm (1/4") jacks with the following pinning: Tip: Live (+)

Item	Description
	Ring: Return (-) Sleeve: Shield
5	<b>Reset-to-default button:</b> Sets the DCNM-WAP to factory default values. Press and hold for at least 8 seconds to set all settings to factory default.

**See also**

- *Planning, page 13*
- *Additional components, page 18*



# 6 Installation Wireless Devices and Accessories

The Wireless Devices are used to add participants to a discussion. See *System overview*, page 9, if required.

### Delivered with product

- The DCNM-WD and DCNM-WDE are shipped without (accessory) parts.

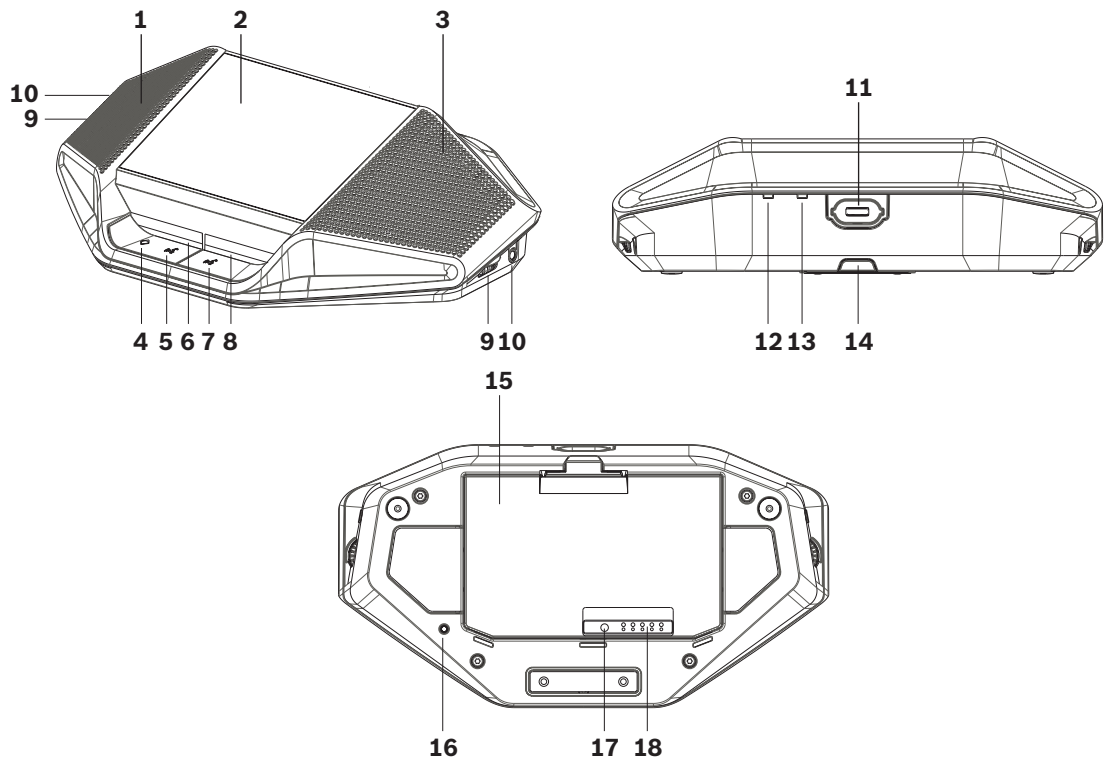
### Installation

The Wireless Devices are free-standing (table-top use). No mechanical installation, other than the accessories as described below, is required.



### Caution!

If a Wireless Device Extended is moved from a warm and humid environment to a cold environment there is a possibility that some condensation can form on the display. To prevent this from happening, make sure each Wireless Device Extended is given sufficient time to acclimatize.



DCNM-WDE and DCNM-WD top, rear and base view



### Caution!

Do not open the Wireless Device. Any hardware change makes the product certificates invalid. Only qualified personnel may open the Wireless Devices.

### Installation of accessories

Follow below steps to install the required accessories to, and placing of, the Wireless Devices. These steps are a summary:

1. Check that all equipment is available.
2. For your reference, see the Wireless Device figure and table in this section.

3. Install the Battery Pack (**15**) in each Wireless Device to be used. Refer to *Battery Pack*, page 28.
4. Attach the microphones to the Wireless Devices (**11**). Refer to *Microphones*, page 27.
5. Place the Wireless Devices in the coverage area of the Wireless Access Point (DCNM-WAP). See *Planning*, page 13, if required.

### Connection, indicators and controls

The following table gives an overview of the Wireless Device items and functionality (Refer to the numbers in the previous figure).

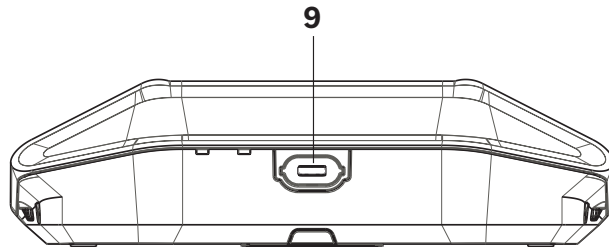
Connection and configuration of the Wireless Devices within the system is done via DCNM-WAP. Refer to the software configuration manual of the DICENTIS Wireless Conference System.

Item	Description
1	Near Field Communication (NFC) user identification (DCNM-WDE only). Used to identify the (logon) participant with an NFC Tag.
2	4.3" capacitive touch screen (DCNM-WDE only).
3	Loudspeaker.
4 + 5	Combined button, depending on software configuration: <ul style="list-style-type: none"> <li>– chairperson <b>priority</b> button (<b>4</b>). Or,</li> <li>– single-use device <b>mute</b> button (<b>4</b>). Or,</li> <li>– dual-use device microphone request button (<b>5</b>).</li> </ul>
6	LED (lightguide) microphone request button ( <b>5</b> ).
7	Microphone request button (single-use, chairperson or dual-use mode).
8	LED (lightguide) microphone request button ( <b>7</b> ).
9	Headphone volume control.
10	3.5 mm stereo jack for headphone.
11	Microphone (input) connector.
12	Red battery-low LED indicator. The LED is flashing when the Battery Pack of the Wireless Device is empty within 1 hour. Charging the Battery Pack is advised. See <i>Battery Pack</i> , page 28. and <i>Charger</i> , page 31.
13	Yellow out-of-range LED indicator. The LED is on when the Wireless Device is not (yet) connected with the Wireless Access Point (DCNM-WAP). Move the Wireless Device within the coverage area of the DCNM-WAP. The LED is flashing when the Wireless Device is trying to make a connection with the Wireless Access Point (DCNM-WAP). See <i>Planning</i> , page 13.
14	(DCNM-WLIION) Battery Pack locking clip. See <i>Battery Pack</i> , page 28.
15	(DCNM-WLIION) Battery Pack. See <i>Battery Pack</i> , page 28.
16	De-init button. When push (>2 seconds), the subscription between the Wireless Device and Wireless Access Point is removed.
17	(DCNM-WLIION) Battery Pack capacity test button. See <i>Battery Pack</i> , page 28.
18	(DCNM-WLIION) Battery Pack capacity LED (5x) indicators. See <i>Battery Pack</i> , page 28.

**See also**

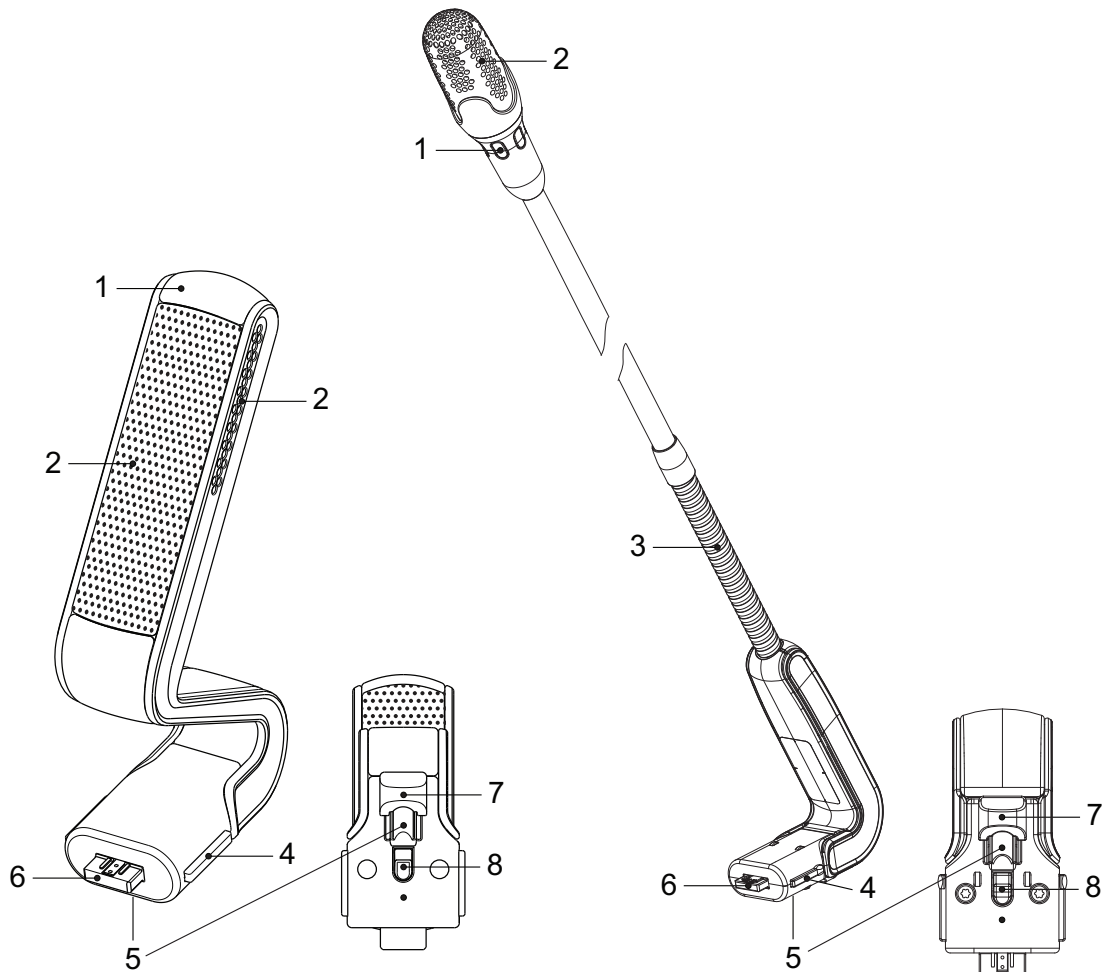
- *Battery Pack, page 28*
- *Microphones, page 27*
- *Planning, page 13*
- *Charger, page 31*

**6.1 Microphones**



**Figure 6.1: DCNM-HDMIC or DCNM-MICx to Wireless Device connection**

Both the DCNM-HDMIC High Directive Microphone and DCNM-MICL/S Stem Microphone are typically used with the DICENTIS devices.



**Figure 6.2: DCNM-HDMIC and DCNM-MICS / DCNM-MICL front and bottom view**

Number	Description
1	LED indicator.

Number	Description
2	Microphone grill.
3	Adjustable stem (DCNM-MICS / DCNM-MICL).
4	Connection guidance.
5	Slider guidance.
6	Connector plug.
7	Lock-slider for lock release (Press and shift to release).
8	Lock.
9	Device female connector (see following figure).

### How to connect or remove the microphone

The microphone can be easily connected to the DICENTIS devices:

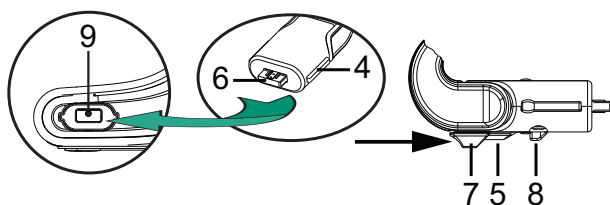


Figure 6.3: DCNM-HDMIC or DCNM-MICS / DCNM-MICL connection

To do so:

1. Gently guide the connection guidance (4) into the DICENTIS device microphone connector (9).
2. Gently push the connector plug (6) into the device microphone connector (9) until the connection lock (5) fits/clicks into place.
3. To remove the microphone from the device: Shift lockslider (7) towards the device and hold in place lock release (8) and pull out the microphone.

## 6.2

### Battery Pack

The Battery Pack (DCNM-WLIION) provides the power supply of the Wireless Devices (DCNM-WD and DCNM-WDE).

Refer to *Installation Wireless Devices and Accessories*, page 25, if required.

#### Battery charging and handling

- Charge the Battery Pack (DCNM-WLIION) immediately on receipt.
- Only use the approved Charger (DCNM-WCH05) to charge the Battery Pack (DCNM-WLIION).
- Immediately recharge the Battery Pack (DCNM-WLIION) when the remaining capacity drops below 5%, indicated when the Red battery-low LED indicator on the rear of the device starts flashing. Refer to *Charger*, page 31.
- Empty battery packs must be charged within 30 days.
- Do not leave an empty Battery Pack in a Wireless Device.

**Recovery of deep discharged batteries**

1. Place the batteries in the charger.
2. After the typical charging cycle of 3 hours, take out the batteries and place them back in the charger.
3. Repeat step 2 until the batteries are fully charged.

**Delivered with product**

- The DCNM-WLIION is shipped without (accessory) parts.



**Caution!**

The lifetime of a Battery Pack can be severely affected if it is completely drained. If a Wireless Device is put in storage or is not being used for a while, remove the Battery Pack and place it in the approved Charger.

**How to install the Battery Pack**

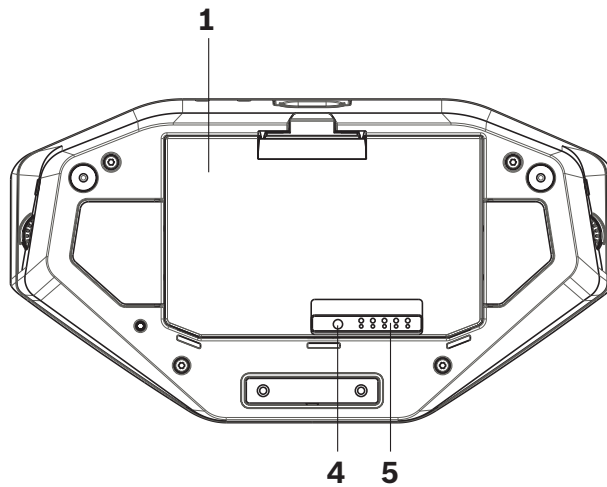


Figure 6.4: Wireless Device bottom view including Battery Pack

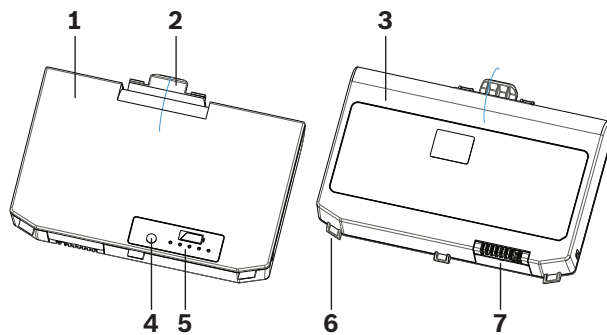


Figure 6.5: DCNM-WLIION Battery Pack top (1) and rear (3) view.

1. Remove the attachable microphone.
2. Turn the Wireless Device up-side-down.
3. Turn the Battery Pack to top view (1) and hook the **securing nocks (6)** in the Wireless Device battery compartment.
4. Gently push down the Battery Pack until it **locks (2)** into the Wireless Device Battery Pack compartment.

### How to remove the Battery Pack

1. Turn the Wireless Device up-side-down.
2. Remove the Battery Pack in reverse order by push-and-hold the locking clip **(2)** and gently pushing up the Battery Pack.
3. Take out the Battery Pack.

### Connections and indicators

The following table gives an overview of the Battery Pack connections and indicators (refer to the numbers in the previous figure in this section).

Item	Description
1	<b>Top view.</b>
2	<b>Locking clip mechanism:</b> Locks the Battery Pack in the Wireless Device.
3	<b>Rear view.</b>
4	Battery Pack <b>capacity/condition test button:</b> Pushing the button lights 0 to 5 capacity LED indicators, depending on the capacity time left <b>(5)</b> .
5	Green Battery Pack <b>capacity LED indicators (5x):</b> Showing the capacity/condition of the Battery Pack. From left to right (5-1), typical each LED indicates a capacity time in <b>hours</b> left: <ul style="list-style-type: none"> <li>– LED 5: 18-20</li> <li>– LED 4: 13-18</li> <li>– LED 3: 8-13</li> <li>– LED 2: 3-8</li> <li>– LED 1: &lt;3</li> </ul> <b>NOTE:</b> The accuracy of the Battery Pack remaining capacity is +/- 20%.
6	<b>Securingnock (3x).</b> Secures the Battery Pack in the Wireless Device.
7	<b>Power supply and charging connector.</b>

### 6.3 Charger

The Charger (DCNM-WCH05) is used for (and can be used for connection to IT power distribution systems):

- Charging the Battery Pack (DCNM-WLIION).
  - One Charger can charge a maximum of 5 Battery Packs at the same time.

**Delivered with product**

- The DCNM-WCH05 is shipped with the following parts:
  - 1x Mains power cable.
  - 1x Loop-through mains power cable.
  - 1x Mounting bracket.
  - 1x Safety instructions.

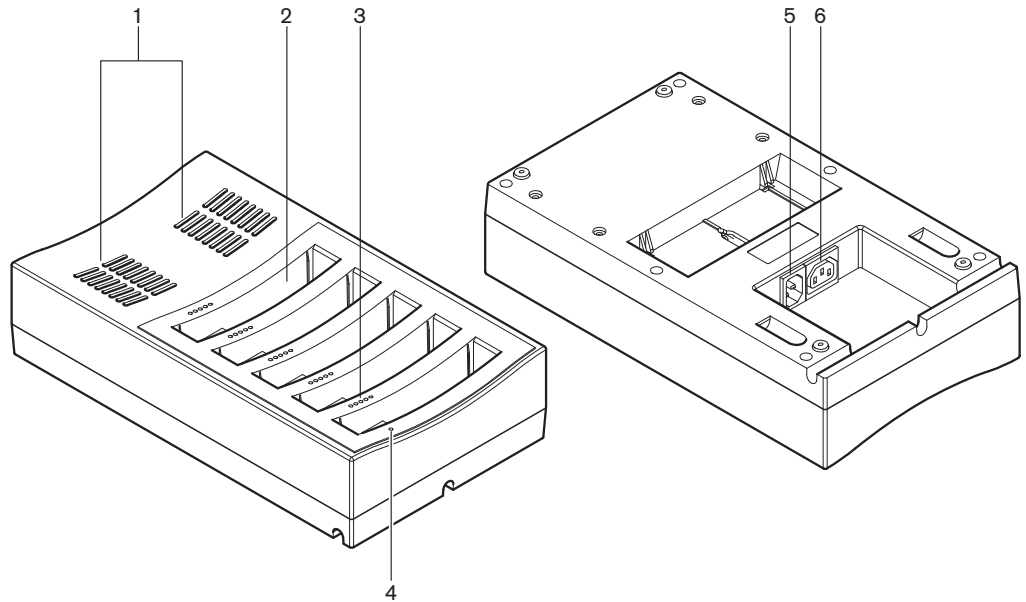


Figure 6.6: Charger DCNM-WCH05

Item	Description
1	<b>Ventilation grilles:</b> Do not obstruct the ventilation grilles. The Charger must remain within the specified temperature range. See <i>Charger (DCNM-WCH05)</i> , page 44.
2	Battery Pack <b>container</b> (5x): Each container could hold a Battery Pack (DCNM-WLIION).
3	<b>Charging level LEDs:</b> Shows the charging level of the Battery Pack: From left to right (5-1), typical each LED indicates a capacity time in <b>hours</b> (left): <ul style="list-style-type: none"> <li>- LED 5: 18-20</li> <li>- LED 4: 13-18</li> <li>- LED 3: 8-13</li> <li>- LED 2: 3-8</li> <li>- LED 1: &lt;3</li> </ul> <p><b>NOTE:</b> The accuracy of the Battery Pack remaining capacity is +/- 20%.  <b>NOTE:</b> It can take up to 1 minute before the first LED is lit.</p>
4	<b>Power on/off LED:</b> Is on when the power cable is connected to Charger and the other end is connected to the mains power supply.

Item	Description
5	<b>Mains power supply socket/inlet.</b> The maximum current handling of the inlet is 10A. Therefore there is a limitation of the number of loop-through Chargers. For details, see the <b>Mains power connection / loop-through</b> paragraph in this section.
6	<b>Mains power supply loop-through socket:</b> The loop-through mains socket allows a maximum number of Chargers to be connected in series to share from the same mains power supply outlet. For details, see the <b>Mains power connection / loop-through</b> paragraph in this section.

### Installation



#### Danger!

Do not open the Charger. Electrical discharges from the Charger can kill you.



#### Warning!

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



#### Caution!

Do not obstruct the ventilation grilles. A blockage of the ventilation grilles can cause a risk of fire and malfunction/defect of the Charger and Battery Pack.



The Charger (DCNM-WCH05) must be fixed installed to the wall by qualified service personnel, using the supplied mounting bracket. Disassembly is also only allowed by qualified service personnel.

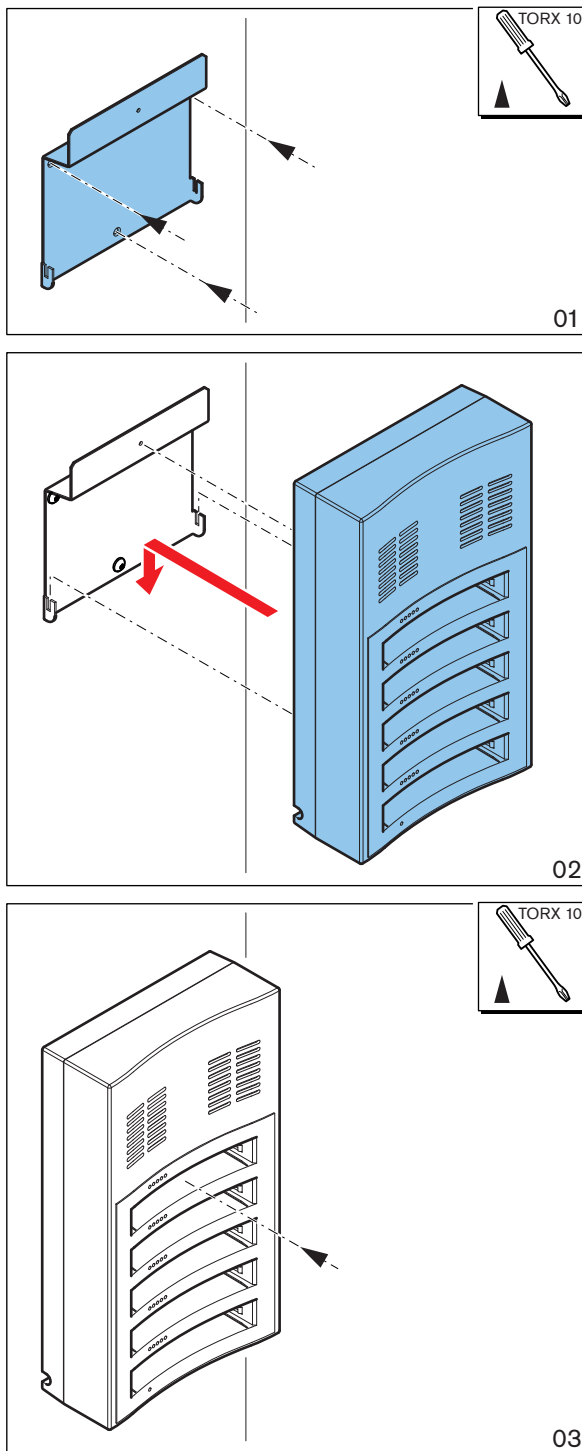
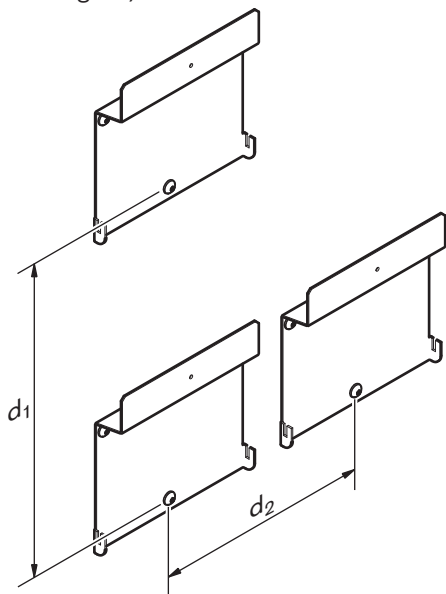


Figure 6.7: Installation to a wall

When installing more than one Charger next to each other, be sure that:

- The vertical distance between two brackets is at least **340 mm** (refer to **d1** in the next figure).
- The horizontal distance between two brackets is at least **195 mm** (refer to **d2** in the next figure).



#### **Mains power supply connection / loop-through**

1. Connect a locally approved mains power cord to the Charger mains power supply socket/inlet **(5)**.
2. With the loop-through mains power supply socket **(6)**, you can loop-through Chargers:
  - If the mains power supply is **100-127 V(AC), 50/60 Hz**, a maximum of **2** Chargers can be looped-through.
  - If the mains power supply is **220-240 V(AC), 50/60 Hz**, a maximum of **5** Chargers can be looped-through.

### Install/remove the Battery Pack

1. Install the Battery Pack until it locks in the Charger, as illustrated in the next figure.
  - Remove the Battery Pack in the reversed order by gently take-out the Battery Pack.
2. Connect the mains power supply to the Charger to power on the Charger and to start the charging process.
  - Power LED (**4**) is on when receiving mains power supply.
  - See the charging level LEDs (**3**) which indicate the charging level of the Battery Pack.

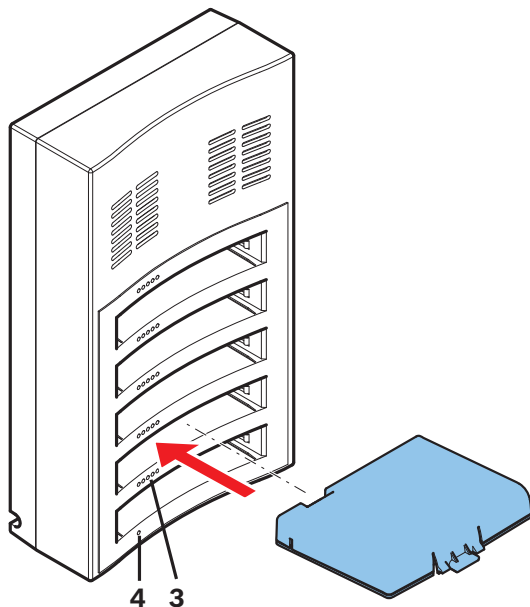


Figure 6.8: Placing of the Battery Pack

### Charging time

- The typical charging time of one Battery Pack is **3** hours.
  - The LEDs (**3**) showing the charging level of the Battery Pack.
- Remove the Battery Pack as soon it is fully charged (All LEDs (**3**) are on).

### See also

- *Charger (DCNM-WCH05), page 44*

## 7 System power on and configuration

Consult the configuration manual of the DICENTIS Wireless Conference System for power on and configuration details of the Wireless Access Point and Wireless Devices.

- For documentation, refer to the DICENTIS Wireless Conference System product related information on:

[www.boschsecurity.com](http://www.boschsecurity.com) > *Country of your choice* > Conference Systems > DICENTIS Wireless Conference System

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## 8 Maintenance

The DICENTIS Wireless Conference System requires minimum maintenance. To ensure for trouble-free operation, clean and inspect the system components on a regular basis:

### 8.1 Cleaning

**Caution!**

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

- 
1. Clean the Wireless Devices with a soft cloth moistened very slightly with a weak soap and water solution.
  2. Clean the touch screen of the Wireless Devices with a dry soft cloth.
  3. Wait until the Wireless Devices are fully dry before reconnecting them to the system cabling.
  4. Clean the Wireless Access Point and Charger with a dry soft cloth, as required.

### 8.2 Inspect components

1. Check all DICENTIS Wireless Conference System components for signs of wear and tear. Replacement products can be ordered from your Bosch representative, if required.
2. Check the Wireless Devices microphone buttons for correct operation. They should not be loose or stick when operated.
3. Check all connectors of the Wireless Access Point and system cabling for damage.
4. Check the functionality of, and charge, the Battery Pack of the Wireless Devices on a regular base.
5. Check the functionality of the Charger on a regular base.

### 8.3 Service

If a defect cannot be resolved, please contact your supplier or system integrator, or contact your Bosch representative directly.

## 9 Technical data

### 9.1 Wireless Access Point (DCNM-WAP)

#### Technical specifications

##### Radio

WIFI standard	IEEE 802.11n
Frequency Range	2.4 GHz and 5 GHz (ISM license free)

##### Electrical

Supply voltage (PSU)	100-240 Vac 50-60 Hz in 48 Vdc out
PoE	802.3af, 802.3at - type 1 mode A (endspan), mode B (midspan)
DCNM system supply	48 Vdc
Power consumption	10 W
Frequency response	80 Hz - 20 kHz
THD at nominal level	<0.1 %
Dynamic range	>98 dBA
Signal-to-noise ratio	>96 dBA
Ethernet	1000Base-T IEEE 802.3ab

##### Audio inputs

Jack nominal	-18 dBV
Jack maximum	+18 dBV

##### Audio outputs

Jack nominal	-18 dBV
Jack maximum	+20 dBV

##### Mechanical

Mounting	Ceiling, Wall or Tripod floor stand (using included bracket)
Dimensions (H x W x D) with bracket	285 x 202 x 65 mm (11.2 x 8.0 x 2.6 in)
Weight: with bracket without bracket	958 g (2.11 lb) 725 g (1.60 lb)
Color	Light grey (RAL 000 7500)

**Environmental**

Operating temperature	5 °C to +45 °C (41 °F to +113 °F)
Storage and transport temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5 %

**Approvals and certifications**

EU	CE, WEEE
US	UL, FCC
CA	CSA, EPS, ISED
KR	KC
AU/NZ	RCM, MEPS, (NZ: GURL)
RU/KZ/BY	EAC
JP	PSE, MIC
CN	China RoHS, CCC, CMIIT
SA	SASO, CITC
BR	ANATEL

## 9.2 Wireless Devices (DCNM-WD and DCNM-WDE)

### Technical specifications DCNM-WD

#### Electrical

Supply voltage (battery pack)	7.5 Vdc
Power consumption	4.5 W
Operating time DCNM-WD	> 24 hours (20% speech, 80% listening)
Frequency response	100 Hz - 20 kHz (-3 dB at nominal level)
THD at nominal level	< 0.1 %
Dynamic range	> 90 dB
Signal-to-noise ratio	> 90 dB
Headphone load impedance	> 32 ohm <1k ohm
Headphone output power	15 mW

#### Radio

WIFI standard	IEEE 802.11n
Frequency Range	2.4 GHz and 5 GHz (ISM license free)

#### Audio inputs

Nominal microphone input	80 dB SPL
Maximum microphone input	110 dB SPL

#### Audio outputs

Loudspeaker nominal output	72 dB SPL at 0.5 m
Loudspeaker maximum output	80 dB SPL
Headphone nominal output	0 dBV
Headphone maximum output	3 dBV

#### Mechanical

Mounting	Tabletop
Dimensions (H x W x D) without microphone	72 x 259 x139 mm (2.8 x 10.2 x 5.5 in)
Weight: DCNM-WD DCNM-WD + Battery Pack	590 g (1.30 Lb) 1051 g (2.32 lb)
Color (top and base)	Traffic black (RAL 9017)



**Environmental**

Operating temperature	5 °C to +45 °C (41 °F to +113 °F)
Storage and transport temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5%

**Technical specifications DCNM-WDE****Electrical**

Supply voltage (battery pack)	7.5 Vdc
Power consumption	4.5 W
Operating time DCNM-WDE	> 20 hours (20% speech, 80% listening)
Frequency response	100 Hz - 20 kHz (-3 dB at nominal level)
THD at nominal level	< 0.1 %
Dynamic range	> 90 dB
Signal-to-noise ratio	> 90 dB
Headphone load impedance	> 32 ohm <1k ohm
Headphone output power	15 mW

**Radio**

WIFI standard	IEEE 802.11n
Frequency Range	2.4 GHz and 5 GHz (ISM license free)

**Audio inputs**

Nominal microphone input	80 dB SPL
Maximum microphone input	110 dB SPL

**Audio outputs**

Loudspeaker nominal output	72 dB SPL at 0.5 m
Loudspeaker maximum output	80 dB SPL
Headphone nominal output	0 dBV
Headphone maximum output	3 dBV

**General**

Screen size (DCNM-WDE only)	4.3 inch
--------------------------------	----------

Screen type (DCNM-WDE only)	Capacitive multi-touch
Supported contactless NFC tag (DCNM-WDE only)	According to: ISO/IEC14443 Type A (from 106 kbps to 848 kbps. MIFARE 106kbps).

**Mechanical**

Mounting	Tabletop
Dimensions (H x W x D) without microphone	72 x 259 x139 mm (2.8 x 10.2 x 5.5 in)
Weight: DCNM-WDE DCNM-WDE + Battery Pack	670 g (1.47 lb) 1131 g (2.49 lb)
Color (top and base)	Traffic black (RAL 9017)

**Environmental**

Operating temperature	5 °C to +45 °C (41 °F to +113 °F)
Storage and transport temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5%

**Approvals and certifications**

EU	CE
US	FCC
CA	ISED
KR	KC
AU/NZ	RCM
RU/KZ/BY	EAC
JP	MIC
CN	China RoHS, CMIIT
SA	SASO, CITC
BR	ANATEL

## 9.3 Battery Pack (DCNM-WLIION)

### Technical specifications

#### Electrical

Nominal output Voltage	7.5 VDC
Capacity	12800 mAh

#### Mechanical

Dimensions (H x W x D)	99.9 x 136.5 x 22 mm (3.93 x 5.37 x 0.87 in)
Weight	460 g (1.0 lb)
Color	Charcoal

#### Environmental

Operating temperature	5 °C to +45 °C (41 °F to +113 °F)
Advised storage and transport temperature	-5 °C to +35 °C (23 °F to +95 °F)
Relative humidity	<75 %, >5 %

#### Approvals and certifications

EU	CE
US	UL, FCC
CA	CSA, ISED
KR	KC
AU/NZ	RCM
RU/KZ/BY	EAC
JP	PSE
CN	China RoHS
SA	SASO, CITC
BR	ANATEL
TH	TISI
Other	UN 38.3

## 9.4 Charger (DCNM-WCH05)

### Technical specifications

#### Electrical

Supply Voltage	100-240 Vac +/- 10 % 50/60 Hz
Maximum power consumption	300 W

#### Mechanical

Dimensions (H x W x D)	340 x 195 x 82 mm (13.4 x 7.6 x 3.2 in)
Weight (without batteries)	1.8 kg (3.97 lb)
Color	Traffic black (RAL 9017)

#### Environmental

Operating temperature	5 °C to +45 °C (41 °F to +113 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5 %

#### Approvals and certifications

EU	CE, WEEE
US	UL, FCC
CA	CSA, ICES-003
KR	KC
AU/NZ	RCM
RU/KZ/BY	EAC
JP	PSE
CN	China RoHS
SA	SASO

## 9.5 High Directive Microphone (DCNM-HDMIC)

### Technical specification

#### Electrical

Power supply	5 VDC
Power consumption	0.1 W
Bandwidth	100 Hz - 15 kHz
Dynamic range	> 96 dB
Nominal input	80 dB SPL
Maximum input	110 dB SPL
Equivalent noise	12 dB SPL

#### Mechanical

Mounting	Plug and fasten into DICENTIS devices.
Dimensions (H x W x D)	108 x 21.5 x 60 mm (4.25 X 0.85 x 2.36 in)
Weight	0.035 kg (0.077 lb)
Color	Traffic black RAL 9017 Pearl light grey RAL 9022

#### Environmental

Operating temperature	0 °C to +45 °C (32 °F to +113 °F)
Storage and transport temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5%

## 9.6 Microphones (DCNM-MICx)

### Technical specifications

#### Electrical

Power supply	5 VDC
Power consumption	0.1 W
Bandwidth	125 Hz - 15 kHz
Dynamic range	>100 dB
Nominal input	85 dB SPL
Maximum input	115 dB SPL
Equivalent noise	15 dB SPL

#### Mechanical

Mounting	Plug and fasten into DICENTIS device and DICENTIS Wireless Devices.
Length: DCNM-MICS (without connector) DCNM-MICL (without connector)	310 mm (12.21 in) 480 mm (19.90 in)
Connector	77.15 x 60.47 mm (3.40 x 2.38 in)
Weight: DCNM-MICS DCNM-MICL	91 g (0.20 lb) 108 g (0.24 lb)
Color: DCNM-MICS / DCNM-MICL	Traffic black RAL 9017 Pearl light grey RAL 9022

#### Environmental

Operating temperature	0 °C to +45 °C (32 °F to +113 °F)
Storage and transport temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	< 95 %, > 5%


# 10

## Appendices


### 10.1

### Product labels for South Korea and the Philippines


#### DCNM WAP label

 MSIP-CRM-BsH-DCNM-WAP	상호명: BOSCH Security systems B.V 제품명 : 특정소출력 무선기기 (무선데이터통신시스템 무선기기) 모델명 : DCNM-WAP (F.01U.299.021) 제조업체 : BOSCH Security systems B.V 제조국 : 포르투갈 (Portugal) 제조일자 : 별도표기 해당 무선설비는 운용 중 전파혼신 가능성이 있음 해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.
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#### DCNM WD label

 MSIP-CRM-BsH-DCNM-WD	상호명: BOSCH Security systems B.V 제품명 : 특정소출력 무선기기 (무선데이터통신시스템 무선기기) 모델명 : DCNM-WD ( F.01U.298.719) 제조업체 : BOSCH Security systems B.V 제조국 : 포르투갈 (Portugal) 제조일자 : 별도표기 해당 무선설비는 운용 중 전파혼신 가능성이 있음 해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.
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#### DCNM WDE label

 MSIP-CRM-BsH-DCNM-WDE	상호명: BOSCH Security systems B.V 제품명 : 특정소출력 무선기기 (무선데이터통신시스템 무선기기) 모델명 : DCNM-WDE ( F.01U.298.744) 제조업체 : BOSCH Security systems B.V 제조국 : 포르투갈 (Portugal) 제조일자 : 별도표기 해당 무선설비는 운용 중 전파혼신 가능성이 있음 해당 무선설비는 전파혼신 가능성이 있으므로 인명안전과 관련된 서비스는 할 수 없습니다.
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