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| DICENTIS Conference System |
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| en Architect’s &Engineer’sSpecifications |



**About this Document**

**Purpose**

When preparing a specification, tender or quotation for a Bosch DICENTIS Conference System, it may be necessary to supply a detailed functional description of all equipment supplied. The Architect’s and Engineer’s Specifications presented in this publication are intended to be used for these purposes, and may be copied and/or reproduced as required.

**Scope**

DICENTIS Conference System can be coupled to other OMNEO based systems and IP networks. This Architect’s and Engineer’s Specifications only contains the functional description specific for the Bosch DICENTIS Conference System.

**Audience**

These Architect’s and Engineer’s Specifications meet the needs of contractors, consultants and other professionals involved in project management, or in designing, specifying and procuring conference systems.

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**Document Format**

The Architect’s and Engineer’s Specifications are available as a digital document in the Word format (.doc). All references to pages, figures, tables, etc. in this digital document contain hyperlinks to the referenced location.

**Special note: conference definition**

For the purpose of this specification, a conference is any gathering of participants where audio amplification is required.

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# Document history

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# Introduction

The “conference system” described in this specification (otherwise referred as the system) shall provide users and owners of venues with a versatile means of fulfilling conference requirements. These venues may include city councils, regional councils and boardrooms. The system shall conform to all relevant ISO and IEC standards.

# Scope of Specification

This specification shall give information on:

* the provision, installation and maintenance of the system.
* media sharing and camera control – used for displaying active speakers and media on the participant’s devices, hall displays, and monitors.
* the provision of an IP Ethernet network – used for advantaged coupling of the system to OMNEO or DanteTM compatible audio systems and/or other types of media system and content management systems.
* configuration, i.e. the preparation and management software ‑  used for controlling the system by means of a PC.

# System summary

## System overview

The conference system shall be easy to install and operate. It shall provide digital signal processing and transmission of all audio signals via an IP Ethernet network, and shall have low susceptibility to mobile phone interference. It shall be a versatile system that provides high-quality audio, whilst ensuring secure data transmission.

It shall be possible to use the conference system via a PC running user-friendly software. The software shall assist in system configuration, meeting preparation, and management and monitoring. A license key shall be used to protect the software from unauthorized copying. The license key shall be returnable so that it can be transferred to another system without the intervention of the supplier.

The conference system shall be a modular system. It shall be possible to connect various elements of a system simply and quickly, by using a daisy-chain, loop-through configuration. It shall also be possible to use a star configuration in which each device is individually connected to the system. Systems shall be expanded or reduced in size by adding or removing equipment.

The range of conference system products shall include: central devices and PCs, application-specific software modules, information display systems and installation equipment. This range shall be complemented by external equipment such as video displays, sound reinforcement amplifiers, HD cameras and accessories, loudspeakers, and printers, all of which shall be fully compatible and easily integrated into the conference system.

Signal transmission and processing shall be by means of advanced digital-audio technology. This advanced digital-audio technology shall result in high-level audio performance (bandwidth up to 20 kHz) with no loss in signal quality or level during transmission. There shall be virtually no background noise, interference, crosstalk or distortion.

The system shall use a standard IP Ethernet network to transport all digital signals: audio, video, data and control. The system shall be able to use standard CAT5e cables and Power over Ethernet switches to supply the system devices. The system shall support a daisy-chain or loop-trough configuration, using an Ethernet compatible cable. It shall be possible to 'tap' these cables at any point to connect extra conference system equipment. It shall support redundant cabling. Power shall be supplied to all devices via these cables.

The central device shall have a built-in equalizer function for use with loudspeakers in contribution devices. It shall include Acoustic Feedback Suppression (AFS). It shall have a power supply for supplying power to the conference devices. The central device shall support a standby mode, which shall result in reduced power use by the conference devices. These functions shall be controlled by means of a user interface on a PC.

The conference system shall provide four main functions for facilitating the progress of conferences. It shall:

1. Provide full facilities for sound management, including speech input by delegates, the chairperson and other participants, and the amplification and relaying of speech to all participants, under the control of the conference chairperson and/or the system operator.
2. Provide full multimedia functionality for each individual participant when a DICENTIS multimedia device is chosen: internet access, document retrieval, presentation and media sharing.
3. Provide facilities for HD camera control. These shall include facilities for automatically switching camera outputs to individual conference devices (DICENTIS multimedia devices), interpreting devices (DICENTIS interpreter desk with video output), hall displays or monitors.
4. Support OMNEO and DanteTM for advanced audio coupling to other audio systems.

The conference system shall be simple and logical to operate by all personnel concerned and by participants, chairpersons and operators. It shall comply with accepted professional standards and practices for all of the functions provided.

## System functions

By use of purpose-built professional equipment, the conference system in its most complete configuration shall be able to:

* control participant’s microphones – automatic control or manual control by the chairperson and/or system operator shall be possible.
* register a participant’s request-to-speak, and automatically handle the waiting list by means of a queuing procedure – the participants speaking and the participants in the waiting list shall be displayed on personal touch-screens, monitors, and/or on a hall display.
* identify and display participants, the chairperson, and/or the system operator by name and/or by seat identification.
* make certain facilities available to other external systems – these facilities shall include internet/intranet, content management systems, sound-reinforcement systems, OMNEO compatible systems, DanteTM compatible systems, control of fixed and moveable cameras, webcast systems and other data, audio and video registration, and video display facilities.
* store system parameters and a database of participants – this information shall be used for pre-selecting participants, controlling and displaying the system status, and for the operating modes of all functions carried out by a system operator from either a central control or a remote location.
* configure and control a camera switching system for displaying the participants speaking. Participants shall be displayed on personal touch-screens, displays, hall displays, and monitors.
* facilitate identification – A participant shall be able to register at a device. During registration, the participant’s user rights shall be assigned to that device, which shall allow the participant to join the meeting. Participants shall be required to identify themselves by providing an Identification card (NFC card), typing a username or selecting their name from a list. An optional password or pin code shall be available for authentication control. Next to these standard available functions it shall be possible to connect a third party system for identification purposes to enable integration with available systems in the building or to enable e.g. biometric scanning. The user interface shall switch to the preferred language of the user upon login.
* facilitate voting – during a voting session, participants with voting rights shall be able to use the conference device to vote.
* facilitate language selection – participants shall be able to select the required language from a language list in the conference device. The language shall automatically be selected upon login of the user.

All equipment shall be capable of being combined as required to reach the desired specification in terms of system size and/or functions, and shall be capable of later field extension by the addition of the required functions and extra devices.

The functionality of the participant's discussion devices shall be extendable by installing additional software modules without the need to upgrade the hardware.

## Compliance

The conference system shall comply with all applicable regulations and standards for equipment of this type. In addition, the system shall comply with all applicable international, national and local regulations for the design, construction and installation of electrical equipment.

## System configuration

The conference system shall be an integrated modular configuration with some or all of the following system components:

* a control position comprising a central audio processing device and a personal computer.
* participant positions with touch-screen displays showing all meeting related data, including real-time video of e.g. the speaking participant.
* display facilities with monitors, plasma and hall displays.
* interface facilities for external devices and systems such as video cameras, printers, data and speech video and media recorders, internet/intranet, content management or document system and a sound reinforcement system
* remote control of certain conference system functions via third-party equipment.

## System installation and interconnection

Installation of the system shall be based on a modular concept that is controlled by a PC and shall include up to 750 discussion devices.

All wiring in the system shall consist of standard CAT 5e cables using PoE. It shall also be possible to use a special cable including power cores with purpose-designed connectors. The connectors shall have a pole configuration that is compatible to a RJ45 connector. It shall use series cabling (loop-through or series-connected branch topology and loop-back for cable redundancy) for interconnection of the contribution equipment. The contribution equipment shall be free standing (table-top units).

An additional power supply shall be available for dividing the network cabling. This shall assist installers in achieving an optimum network-line layout.

The central equipment shall be free-standing (table-top devices) or built into 19” racks.

## System operation

Operation and/or control of the system shall be possible at a number of different levels:

* **Technician level** that shall use one or more modes of operation to give automatic control over conference proceedings. These pre-set modes shall be selectable by using a user interface at a PC.
* **Chairperson’s level** that shall use one or more modes of operation to give automatic control over conference proceedings. These pre-set modes shall be selectable by using a user interface at a PC.
* **Participant’s level** that shall use one or more automatic modes to give participants limited control in discussion proceedings.
* **System operator(s) level**, that shall use a user interface on one or more PCs – single or multi PC systems shall be supported.

Appropriate control facilities shall be provided for each of these levels.

## Conference device

The functionality of the participant's discussion devices shall be extendable by installing additional software modules without the need to upgrade the hardware.

It shall be possible to remotely control the behavior of the device by using a user interface on a PC. The discussion devices shall be suitable for table-top use.

## First-line system maintenance

The system design shall permit fast and effective fault finding and correction of problems by local personnel. This shall be supported by built-in self-diagnostic functions. Spare part kits and instructions shall be provided.

Pre-selected system status and information entered into the system shall not be lost in the event of a mains failure. In such a situation, the system shall automatically and immediately return to its last operating status when power is restored.

# Functional description of the system

The conference system in a basic configuration (without control from a PC) shall provide the chairperson with a high degree of control over conference proceedings and participants.

When managed by an operator, the conference system shall provide the operator with full management over conference proceedings and participants.

Management of the conference system shall be via one or more PCs running a conference application. The software application is modular, and the operator shall be able to configure and prepare the system according to the needs of the meeting. The software modules shall be protected from unauthorized copying by a license key.

## Discussion management

Discussion management shall be used to determine:

* how the microphones of the conference system are switched on and off.
* how many microphones may be active at the same time.
* the microphone operation mode used to operate the system.
* How long a participant is allowed to speak

Discussion management shall be carried out by the chairperson using the chairperson’s console. The chairperson’s console shall be assignable by a software setting without having to set any hardware switches.

Selection and setting of the system microphone operating mode shall be under the control of the chairperson via the conference device. A selection of operating modes shall be provided, including:

* open mode (automatic control with up to twenty five simultaneous speakers)
* ‘first-in, first-out’ mode, with up to twenty five simultaneous speakers
* voice mode
* response mode

In open mode with automatic shift enabled, participants shall be able to use the microphone button on their conference device to enable their microphone. When the maximum number of participants that can speak is reached, the next participant that enables his or her microphone shall be added to a waiting list. The microphone shall not be enabled until another participant disables his or her microphone or the chairperson disables a participant’s microphone. A white LED in the microphone button shall be lit to indicate when the maximum number of speakers is not reached.

In open mode without automatic shift enabled, participants shall not be able to use the microphone button on their contribution devices to immediately enable their microphones. The participants shall always be added to a waiting list instead. A participant’s microphone shall be enabled when the chairperson shifts the participant from the waiting list to the speaker list. When the maximum number of participants that can speak is reached, a shift action of the chairperson shall disable the microphone that was activated for the longest time.

In override mode (‘first-in, first out mode’) participants shall be able to use the microphone button on their conference device to activate their microphone. When the maximum number of participants that can speak is reached, the next participant that activates his or her microphone shall automatically deactivate the microphone that was activated for the longest time. A white LED in the microphone button shall be lit to indicate when the maximum number of speakers is not reached.

In voice mode participants shall be granted the floor without the need to press a button. The participant shall be able to mute his microphone using the microphone button.

In response mode, participants shall not be able to use the microphone button on their contribution devices to immediately enable their microphones. The participants shall always be added to a waiting list instead. A participant’s microphone shall be enabled when the chairperson shifts the participant from the waiting list to the speaker list. When the maximum number of participants that can speak is reached, a shift action of the chairperson shall disable the microphone that was activated for the longest time. Participants shall have the possibility to issue a request to respond to the active speaker. The response queue shall be configurable between 1 and 99 responses. Only 1 responder shall be active. When the microphone of a responder is activated, the previous responder is removed from the response queue. The response queue will be cleared when a new speaker from the speakers queue will be granted the floor.

It shall be possible to switch off the microphones automatically when they are not spoken into.

It shall be possible to configure a speech timer.

It shall be configurable if the microphone LED of the first participant in the queue blinks.

It shall be configurable if the microphone LED of the participant in the queue is green or off.

Provisions shall be made for an unlimited number of participants to be assigned priority status. The designated participants with priority status shall be able to speak at any time by activating their microphones. The priority status shall be indicated by a white LED in the conference device. There shall be two priority modes: button operated, and push to talk.

The system shall have a feedback suppressor, echo cancellation, and at least two parametric equalizers to ensure optimal speech amplification and intelligibility; one parametric equalizer shall be used for the conference device loudspeakers, the other shall be used for the external sound reinforcement system.

### Chairperson

The chairperson shall have priority over participants and shall control the meeting by using a discussion device that is configured to manage meetings.

A discussion device that is configured for a chairperson shall have a priority button and a microphone button for speaking. The device shall have a pluggable high-directive unobtrusive microphone or a pluggable long or short stem microphone, as well as a loudspeaker.

The discussion device shall have an indicator above the priority and request-to-speak button. This indicator shall light green when the chairperson is listed in the waiting list; it shall light red when the microphone is on. The microphone shall have an indicator that lights green when a request-to-speak is accepted by the system; it shall light red when the microphone is on. An additional red LED indicator on the rear of the device shall also be lit to indicate when the microphone is on.

When a request-to-speak has been entered, green LEDs shall light to confirm that a request-to-speak has been accepted. A request-to-speak shall subsequently be cancelled by a second operation of the request-to-speak button. The green LEDs shall flash when the participant is first in the waiting list and shall be the next one to get the floor.

When the priority button is pressed, a chime shall be audible and all microphones of speaking participants shall be muted while the priority button is pressed. When the button is released, all microphones shall be un-muted.

The discussion device shall be free-standing.

### Participant

The discussion device shall have a mute button and a microphone button for speaking. The device shall have a pluggable high-directive unobtrusive microphone or a pluggable long or short stem microphone, as well as a loudspeaker.

The discussion device shall have an indicator above the mute and request-to-speak button. This indicator shall light green when the participant is listed in the waiting list; it shall light red when the microphone is on. The microphone shall have an indicator that lights green when a request-to-speak is accepted by the system; it shall light red when the microphone is on. An additional red LED indicator on the rear of the device shall also be lit to indicate when the microphone is on.

When a request-to-speak has been entered, green LEDs shall light to confirm that a request-to-speak has been accepted. A request-to-speak shall subsequently be cancelled by a second operation of the request-to-speak button. The green LEDs shall flash when the participant is first in the waiting list and shall be the next one to get the floor.

When the mute button is pressed, the microphone of the participant shall be muted. When the button is released the microphone shall be un-muted.

The conference device shall have a full-color 7” capacitive touch screen, an onscreen channel selector and headphone volume control, a physical volume rotary control, and a headphone connector.

It shall be possible to:

* use the touch screen to inform the participant about the discussion. (DICENTIS Multimedia device and DICENTIS Discussion device with touchscreen)
* monitor the name of the participant speaking. (DICENTIS Multimedia device and DICENTIS Discussion device with touch screen)
* see the names of all participants waiting to speak. (DICENTIS Multimedia device and DICENTIS Discussion device with touchscreen)
* monitor the image of the participant speaking. (DICENTIS Multimedia device)

The discussion device shall be free-standing.

## Automatic camera control

It shall be possible to use an automatic camera control system to ensure that speaking participants are automatically displayed on all conference devices and on hall displays or monitors.

The system shall be controlled by the microphone activity of the devices.

The system shall allow camera control by means of fixed or moveable IP cameras with zoom lenses, pan and tilt heads and prepositions. Use of high-speed HD dome cameras shall be preferred. There shall be a low latency SDI video output stream for connecting additional monitors and audience displays. The system shall have an interface to control an external SDI video switcher.

The system shall be able to control ONVIF cameras, Sony IP cameras and Panasonic IP cameras.

The system shall include a H264 video switcher to switch H264 streams of all connected cameras to the conference devices.

It shall be possible to display the names of speaking participants embedded in the video streams.

Camera system configuration shall only require configuration on the PC.

The system operator shall be able to override the automatic camera positions by using the conference management application or via the embedded browser in the camera.

It shall be configurable whether to display the video on the devices or not.

## Connecting peripheral equipment

Provision shall be made for interconnection of the conference system with various external devices and systems, as required, via an application programming interface.

### External system connections

Additional facilities shall be provided for the connection of external system equipment. These facilities shall comprise at least:

* a PC-driven interface for control of external equipment such as video cameras (via a SDI control matrix), video displays.
* two audio line (balanced and unbalanced) outputs for connection to a sound reinforcement system, audio mixers and/or to a voice logging system for audio registration of all spoken conference proceedings.
* two audio lines (balanced and unbalanced) inputs to allow connection of audio sources.
* coupling to OMNEO and DanteTM compatible devices to allow versatile audio distribution and contribution over long distances.
* use of a telephone coupler for connection to a remote participant or conference system.
* insertion of an external sound processing device such as an additional graphic equalizer in the audio path of the conference device loudspeakers.

# Contribution equipment

## Multimedia device

The multimedia device shall be optimized for local and regional councils and shall be ideal when multimedia and internet content is required. The device shall be easily plugged into, or removed from, the system cabling, which shall enable the system to be set up quickly and efficiently. To combine security and ease of use, the multimedia device supports Identification, by use of a Near Field Communication (NFC) reader, for identifying users.

The device shall be free-standing or fixed using mounting screws. The device shall be connected in a simple daisy chain configuration. Alternatively, the devices shall be connected in a star configuration where each device is connected to the system with an individual CAT 5e cable. The device shall support a neat and clean system installation, suitable for TV coverage. Storage and transport shall be simplified by the use of sturdy suitcases.

The device shall have the following features and benefits:

* Full color 7” capacitive‑touch graphical display including:
	+ Agenda and meeting data browsing.
	+ Internet browsing.
	+ Live video
	(e.g. for showing the current speaker).
	+ Meeting management for the chairperson.
	+ Headphones volume control.
	+ Possibility to add 3rd party android app.
	+ Functionality can be increased by adding software.
* Document retrieval (via “More info” hyperlink on touch display):
	+ MSWord (.doc, .docx).
	+ Excel (.xls, .xlsx).
	+ PowerPoint (.ppt, .pptx, .pps, .ppsx).
	+ Portable Document Format (.pdf).
	+ Rich Text Format (.rtf).
	+ Plain text (.txt).
* Images codecs: .jpg .gif .png .bmp .webp
* Audio codecs:
	+ AAC (.3gp, .mp4, .m4a).
	+ Flac (.flac).
	+ Mp3 (.mp3).
	+ Vorbis (.oog).
	+ PCM (.wav).
* Video codecs:
	+ H263 (.3gp, .mp4).
	+ H264 (.3gp, .mp4).
	+ MPEG4 (.3gp).
	+ vp8 (.webm).
* Pluggable microphones.
* Built‑in 3M pixel camera for future use.
* Built‑in two‑way loudspeaker.
* Microphone on/off button or request‑to‑speak button.
* Microphone mute or chairperson priority button.
* Indicators showing: microphone on, request‑to‑speak, and possible‑to‑speak states.
* Built‑in Near Field Communication (NFC) contactless tag reader

The device shall have the following interconnections

* Socket for pluggable microphone.
* 2x RJ45 compatible connection for system communication and power.
* 3.5 mm stereo jack for headphones, external microphone or headset microphone.
* Hot plug‑and‑play.
* Provision to attach a magnetic name card holder.

The device shall have the following Technical Specifications:

General

Screen size 7 inch, 1024 x 600 pixels

Screen type capacitive multi-touch

Operating system Android 4.03

Supported contactless

NFC tag According to: ISO/IEC14443 Type A (from 106 kbps to 848 kbps. MIFARE 106kbps).

Electrical

Supply voltage 48 Vdc IEEE 802.3 at Type 2

Power consumption

Max. 12 W

Frequency response 100 Hz – 20 kHz
(-3 dB at nominal level)

THD at nominal level < 0.01 %

Dynamic range 96 dB (14‑110 dBSPL)

Signal-to-noise ratio 66 dB with respect to nominal level headroom 30 dB

Audio inputs

Nominal mic. 80 dB according IEC60914

Maximum mic. 110 dB according IEC60914

External mic. nom. -38 dBv

External mic. max. -25 dBv

Audio outputs

LSP nom. 72 dB SPL @ 0.5 m

LSP max. 90 dB SPL

Headphone nom. -3 dBv

Headphone max. 0 dBv

Mechanical

Mounting Tabletop

Dimensions (HxWxD) 75 x 312 x 175 mm

 (2.95 X 12.28 x 6.89 in)

Weight max. 1.85 kg (4.078 lb)

Color Traffic black RAL 9017

 Pearl light grey RAL 9022

Environmental

Operating temperature 0 ºC to +35 ºC

 (32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 95 %, > 5%

The product shall be or similar to:

DCNM-MMD2 DICENTIS Multimedia device.

## Discussion device with touch screen

The Discussion device with touch screen shall have a 4.3 inch touch screen and it shall be completely software upgradable. It shall have a lot of features including independent dual-use for language selection and voting. It shall have a simple software setting to enable two participants to share a device and listen to proceeding in two different languages. It shall be possible to cast separate votes on a shared device.

The 4.3 inch capacitive touch screen shall inform

participants of the proceedings and increases meeting

efficiency by displaying the current speaker and

delegates in the request list. Available translations and

voting information shall be possible to display. It shall be possible to control the headphone volume via the touch screen. The UI shall be in the preferred language of the user.

The device shall have the following features and benefits:

* Single‑use and chairperson can be configured via the PC configuration software application.
* Supports star and loop-trough connection.
* 4.3 inch capacitive multi-touch screen for displaying:
* Multiple user interface languages in original characters.
* Speaker list and Request list.
* Customer logo
* Built‑in Near Field Communication (NFC) contactless tag reader.
* Additional functionality by use of software licenses only.
* Identification functionality.
* Voting.
* Select language.
* Dual use.
* Audio mute button.

**Speech intelligibility**

* Crystal‑clear sound due to a very high signal‑to‑noise ratio.
* Maximum speech intelligibility is guaranteed.
* The loudspeaker and microphone can be active at the same time to facilitate a face‑to‑face meeting experience. A feedback suppressor is built in to prevent acoustic feedback.

**Security**

* Encryption ensures that information within the system remains confidential.

**Microphones**

* A socket shall be provided to connect the pluggable microphones.

**Headphones and loudspeakers**

The device has a headphone connection and

independent volume control (on both sides of the

device), so the speaker can be heard clearly even

when there is excessive background noise.

**Controls and Indicators**

Top side of device:

* inch capacitive display with touch screen.
* Microphone with a red or green indicator:

– Red indicates that the microphone is active.

– Green indicates that a request-to-speak is accepted.

* LED indicators on device showing:

– Microphone on state – Red.

– Possible‑to‑speak – White.

– Priority – White (Chairperson only).

– Request‑to‑speak – Green.

Left and right‑hand side of the device:

* Rotary controls for independent headphone volume control.

**Interconnections**

* Socket for pluggable microphone.
* Two 3.5 mm (0.14 in) headphone sockets stereo jack type.
* 2x RJ45 compatible connection for system communication and power.
* Hot Plug-and-play.

The device shall have the following Technical Specifications:

General

Screen size 109.22 mm (4.3 inch)

Screen type capacitive multi-touch

Supported contactless

NFC tag According to: ISO/IEC14443 Type A (from 106 kbps to 848 kbps. MIFIRE 106kbps).

Electrical

Supply voltage 48 Vdc

Power consumption

Max. 5 W

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

Audio inputs

Nominal mic. 80 dB according IEC60914

Maximum mic. 110 dB according IEC60914

Audio outputs

LSP nom. 72 dB SPL at 0.5 m

LSP max. 87 dB SPL

Headphone nom. 0 dBv

Headphone max. 3 dBv

Headphone load

Impedance >32 ohm < 1k ohm

Headphone output

power 65 mW

Mechanical

Mounting Tabletop

Dimensions (HxWxD) 72 x 259 x 139 mm

 (2.8 x 10.2 x 5.5 in)

Weight max. Approx. 1035 g (2.3 lb)

Color Traffic black RAL 9017

Environmental

Operating temperature 5 ºC to +45 ºC

 (41 ºF to +113 ºF)

Storage temperature -30 ºC to +70 ºC

 (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-DE DICENTIS Discussion device with touch screen.

## Discussion device with language selector

The Discussion device with language selector shall enable delegates to listen conveniently to the speaker in their preferred language. Language selection shall be straightforward and is automatically activated when headphones are connected to the device. It shall be possible for the delegate to scroll through the available languages by pressing the illuminated touch buttons. Available languages shall be displayed in native characters to enhance readability. The headphone volume level shall be displayed on the device.

Dual-use and fast participant recognition (via NFC tag

identification) shall be conveniently enabled by the use

of additional software licenses.

The device shall have the following features and benefits:

**General**

* Single‑use and chairperson can be configured via the

PC configuration software application.

* Supports star and loop-trough connection.
* 1.44 screen for displaying:

– Language selection in original characters.

– Language selection in ISO abbreviation form.

– Language numbers.

* Built‑in Near Field Communication (NFC) contactless tag reader.
* Additional functionality by use of software license only:

– Identification functionality.

– Select language (license included).

– Dual use.

* Audio mute button

**Speech intelligibility**

* Crystal‑clear sound due to a very high signal‑to‑noise ratio.
* Maximum speech intelligibility is guaranteed.
* The loudspeaker and microphone can be active at the same time to facilitate a face‑to‑face meeting experience. A feedback suppressor is built in to prevent acoustic feedback.

**Security**

* Encryption ensures that information within the system remains confidential.

**Microphones**

* A socket shall be provided to connect the pluggable microphones

**Headphones and loudspeakers**

The device shall have a headphone connection and

independent volume control (on both sides of the

device), so the speaker can be heard clearly even

when there is excessive background noise.

**Controls and Indicators**

On top side:

* 1.44 inch display with 2 touch buttons.
* NFC identification indicator.
* Microphone with a red or green indicator:

– Red indicates that the microphone is active.

– Green indicates that a request-to-speak is accepted.

* LED indicators on device showing:

– Microphone on state – Red.

– Possible‑to‑speak – White.

– Priority – White (Chairperson only).

– Request‑to‑speak – Green.

Left and right‑hand side of the device:

* Rotary controls for independent headphone volume control.

**Interconnections**

* Socket for pluggable microphone.
* Two 3.5 mm (0.14 in) headphone sockets stereo jack type.
* 2x RJ45 compatible connection for system communication and power.
* Hot Plug-and-play.

The device shall have the following Technical Specifications:

General

Screen size 36.58 mm (1.44 inch)

Screen type LCD

Supported contactless

NFC tag According to: ISO/IEC14443 Type A (from 106 kbps to 848 kbps. MIFIRE 106kbps).

Electrical

Supply voltage 48 Vdc

Power consumption

Max. 3.6 W

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

Audio inputs

Nominal mic. 80 dB according IEC60914

Maximum mic. 110 dB according IEC60914

Audio outputs

LSP nom. 72 dB SPL at 0.5 m

LSP max. 87 dB SPL

Headphone nom. 0 dBv

Headphone max. 3 dBv

Headphone load

Impedance >32 ohm < 1k ohm

Headphone output

power 65 mW

Mechanical

Mounting Tabletop

Dimensions (HxWxD) 72 x 259 x 139 mm

 (2.8 x 10.2 x 5.5 in)

Weight max. Approx. 955 g (2.1 lb)

Color Traffic black RAL 9017

Environmental

Operating temperature 5 ºC to +45 ºC

 (41 ºF to +113 ºF)

Storage temperature -30 ºC to +70 ºC

 (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-DSL DICENTIS Discussion device with language selector.

##  Discussion device with voting

The Discussion voting device shall incorporate standard parliamentary-style voting. To enable the participant to fully concentrate on the discussion, the voting touch buttons shall only light up when voting is available. The device shall also supports fast participant recognition via NFC tag identification. The device shall have the following features and benefits:

**General**

* Single‑use and chairperson can be configured via the PC configuration software application
* Supports star and loop-trough connection
* Capacitive touch voting buttons (parliamentary style).
* Built‑in Near Field Communication (NFC) contactless tag reader.
* Additional functionality by use of software modules only:

-Identification functionality.

* Audio mute button.

**Speech intelligibility**

* Maximum speech intelligibility is guaranteed at all times.
* The device shall produce crystal‑clear sound due to a very high signal‑to‑noise ratio
* The loudspeaker and microphone can be active at the same time for a face‑to‑face meeting experience. To prevent acoustic feedback, a feedback suppressor is built‑in

**Security**

* Encryption shall ensure that information within the system remains confidential.
* **Microphones**
* A socket shall be provided to connect the pluggable microphone.
* **Headphones and loudspeakers**
* The device shall accommodate two headphone connections and independent volume controls (on the left and right-hand side), so the speaker can be heard clearly even with excessive background noise.
* **Controls and Indicators**
* On top side:
	+ 5 color coded capacitive touch voting buttons
	+ NFC active indication LED
	+ Microphone with a red or green indicator:
		- Red indicates microphone is active.
		- Green indicates request-to-speak accepted.
	+ LED indicators on device showing:
		- Microphone on state – Red.
		- Possible‑to‑speak – White.
		- Priority – White (Chairperson only). - Request‑to‑speak – Green.
* On the left and right hand side– Headphone rotary volume controls for independent volume control.

**Interconnections**

* Socket for pluggable microphone
* Two 3.5 mm (0.14 in) headphone sockets stereo jack type
* 2x RJ45 compatible connection for system communication and power
* Hot Plug-and-play

The device shall have the following Technical Specifications:

General

Touch buttons Capacitive touch buttons

Supported contactless

NFC tag According to: ISO/IEC14443 Type A (from 106 kbps to 848 kbps. MIFIRE

Electrical

Supply voltage 48 Vdc

Power consumption

Max. 3.7 W

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

Audio inputs

Nominal mic. 80 dB according IEC60914

Maximum mic. 110 dB according IEC60914

Audio outputs

LSP nom. 72 dB SPL at 0.5 m

LSP max. 87 dB SPL

Headphone nom. 0 dBv

Headphone max. 3 dBv

Headphone load

Impedance >32 ohm < 1k ohm

Headphone output

power 65 mW

Mechanical

Mounting Tabletop

Dimensions (HxWxD) 72 x 259 x 139 mm

 (2.8 x 10.2 x 5.5 in)

Weight max. Approx. 955 g (2.1 lb)

Color Traffic black RAL 9017

Environmental

Operating temperature 5 ºC to +45 ºC

 (41 ºF to +113 ºF)

Storage temperature -30 ºC to +70 ºC

 (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-DVT DICENTIS Discussion device with voting

## Discussion device

The Discussion device shall be easily

configured as a single-use or chairperson device via

the PC configuration software application. To provide

a cost-efficient and flexible solution it shall be possible to add a software license to enable dual‑use.

The device shall have the following features and benefits:

**General**

* Single‑use and chairperson can be configured via the PC configuration software application.
* Supports star and loop-trough connection.
* Dual-use functionality enabled by use of software license.
* Audio mute button.

**Speech intelligibility**

* Crystal‑clear sound due to a very high signal‑to‑noise ratio.
* Maximum speech intelligibility is guaranteed.
* The loudspeaker and microphone can be active at the same time to facilitate a face‑to‑face meeting experience. A feedback suppressor is built in to prevent acoustic feedback.

**Security**

* Encryption ensures that information within the system remains confidential.

**Microphones**

* A socket shall be provided to connect the pluggable microphones

**Headphones and loudspeakers**

The device shall have a headphone connection and

independent volume control (on both sides of the

device), so the speaker can be heard clearly even

when there is excessive background noise.

**Controls and Indicators**

Top side of device:

* Microphone with a red or green indicator:

– Red indicates that the microphone is active.

– Green indicates that a request-to-speak is accepted.

* LED indicators on device showing:

– Microphone on state – Red.

– Possible‑to‑speak – White.

– Priority – White (Chairperson only).

– Request‑to‑speak – Green.

Left and right‑hand side of the device:

* Rotary controls for independent headphone volume control.

**Interconnections**

* Socket for pluggable microphone.
* Two 3.5 mm (0.14 in) headphone sockets stereo jack type.
* 2x RJ45 compatible connection for system communication and power.
* Hot Plug-and-play.

The device shall have the following Technical Specifications:

Electrical

Supply voltage 48 Vdc

Power consumption

Max. 3.1 W

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

Audio inputs

Nominal mic. 80 dB according IEC60914

Maximum mic. 110 dB according IEC60914

Audio outputs

LSP nom. 72 dB SPL at 0.5 m

LSP max. 87 dB SPL

Headphone nom. 0 dBv

Headphone max. 3 dBv

Headphone load

Impedance >32 ohm < 1k ohm

Headphone output

power 65 mW

Mechanical

Mounting Tabletop

Dimensions (HxWxD) 72 x 259 x 139 mm

 (2.8 x 10.2 x 5.5 in)

Weight max. Approx. 955 g (2.1 lb)

Color Traffic black RAL 9017

Environmental

Operating temperature 5 ºC to +45 ºC

 (41 ºF to +113 ºF)

Storage temperature -30 ºC to +70 ºC

 (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-D DICENTIS Discussion device

## Pluggable high-directive microphone

The “pluggable high-directive microphone” shall be a stylish and ergonomically designed high-directive microphone that shall give the user a clear view of the meeting room, due to its unobtrusive design. The high-directive microphone shall contain two precisely positioned capsules to give it a high-directive response. This shall make it possible to have a larger speaking distance than normal from the microphone, even in noisy conditions.

The microphone shall have the following features and benefits:

* Discrete microphone for user convenience.
* High directive response.
* Ultra -low noise.
* Low susceptibility to interference from mobile phones.
* Possibility to hot swap microphones.

The microphone shall have the following controls and indicators:

* Red or green illuminator. Red indicates that microphone is active; green indicates that request-to-speak is accepted.

The microphone shall have the following interconnections:

* Connector to plug and fasten the microphone.

The microphone shall have the following Technical Specifications:

Electrical

Bandwidth 100 Hz – 15 kHz

 according IEC60914

Dynamic range > 96 dB

Mechanical

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 ºC to +45 ºC

 (32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 95 %, > 5%

The product shall be or similar to:

DCNM‑HDMIC - DICENTIS High Directive Microphone.

## Pluggable short stem microphone

The “pluggable short stem microphone” with adjustable stem, shall be a stylish and ergonomically designed microphone that can be positioned to suit the user.

The microphone shall have a unidirectional response that shall provide optimum performance, even in noisy conditions or acoustical challenging rooms.

The microphone shall have the following features and benefits:

* Built‑in plop and windshield.
* Adjustable stem (suitable for situations where people want to speak standing upright).
* Low susceptibility to interference from mobile phones.
* Possibility to hot swap microphones.

The microphone shall have the following controls and indicators:

* Red or green illuminator. Red indicates that microphone is active, green indicates that request-to-speak is accepted.

The microphone shall have the following interconnections:

* Connector to plug and fasten the microphone.

The microphone shall have the following Technical Specifications:

Electrical

Bandwidth 125 Hz – 15 kHz

 according IEC60914

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 conference device

Length 310 mm (12.21 in)

 (without connector)

Connector 77.15 x 60.47 mm (3.40 x 2.38 in)

Weight 91 g (0.20 lb)

Color Traffic black RAL 9017

 Pearl light grey RAL 9022

Environmental

Operating temperature 0 ºC to +45 ºC

 (32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 95 %, > 5%

The product shall be or similar to:

DCNM-MICS – DICENTIS Short Stem Microphone.

## Pluggable long stem microphone

The “pluggable long stem microphone” with adjustable stem, shall be a stylish and ergonomically designed microphone that can be positioned to suit the user.

The microphone shall have a unidirectional response that shall provide optimum performance, even in noisy conditions or acoustical challenging rooms.

The microphone shall have the following features and benefits:

* Built‑in plop and windshield.
* Adjustable stem (suitable for situations where people want to speak standing upright).
* Low susceptibility to interference from mobile phones.
* Possibility to hot swap microphones.

The microphone shall have the following controls and indicators:

* Red or green illuminator. Red indicates that microphone is active; green indicates that request-to-speak is accepted.

The microphone shall have the following interconnections:

* Connector to plug and fasten the microphone.

**The microphone shall have the following Technical Specifications:**

Electrical

Bandwidth 125 Hz – 15 kHz

 according IEC60914

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 conference device

Length 480 mm (19.90 in)

 (without connector)

Connector 77.15 x 60.47 mm (3.40 x 2.38 in)

Weight 108 g (0.24 lb)

Color Traffic black RAL 9017

 Pearl light grey RAL 9022

Environmental

Operating temperature 0 ºC to +45 ºC

 (32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 95 %, > 5%

The product shall be or similar to:

DCNM-MICL – DICENTIS Long Stem Microphone.

## Interpreter desk

The single-user interpreter desk shall have a simplified, intuitive and ergonomic design. Clear positioning of the controls shall allow intuitive operation without mistakes. The Interpreter desk shall provide only relevant information, a single glance shall be sufficient for the entire interpreting process. It shall fully comply with ISO 20109.

The device shall have the following features and benefits:

* Simplified, intuitive and ergonomic design
* Assignable buttons for quick access to supporting functions
* Built-in NFC reader for personal presets
* Input preset buttons positioned in a vertical direction and clearly separated from the output selection buttons
* Output selection buttons positioned in a vertical direction
* Supports up to 100 languages
* Fully compliant with ISO 20109

**•** Supports up to ten desks per booth

• Provides hot plug and play

• Automatic external headset microphone selection

• Hearing protection for predefined headphones and headsets

• Tactile feedback for all controls

• Shall provide audible feedback and pimples for visually impaired users

• High contrast 7 inch display

• Supports language and system configuration from the interpreter desk’s configuration menu

* Built-in NFC contactless reader to retrieve personal settings

The device shall have the following controls and indicators:

• Headphone rotary volume control

• Headphone rotary bass and treble tone controls

• Loudspeaker rotary volume control

• Floor / auto-relay selection button and LED indicators

• Microphone button with red “on-air” and green “booth not in use” LED indicators

• Mute button

• Red “on-air” LED at the rear

The device shall have the following display features:

* 7 relay language preset buttons, with indicators for selected preset and language: number, abbreviation and quality
* A, B (and C) language output buttons, with indicators for output: selection and state; language: number, abbreviation, engaged

• Rotary control with integrated push button to change settings

• Real-time clock

• Loudspeaker selected language indicator

• Audible feedback active indicator (beeps)

* Microphone or external headset

selection indicator

The device shall have the following interconnections:

• Three 3.5 mm headphones / headset sockets TRRS (left side, right side and bottom side)

• Two RJ45 compatible connections for system communication and power. Shall enable loop-through cabling by using system cables or star cabling using standard Cat. 5e cables or better and PoE switches

• USB connector (for future use)

* Connector for pluggable microphones

The Interpreter desk shall have the following technical specifications:

**Electrical**

Power supply 48 VDC

 IEEE802.3at class 4, PoE+

Power consumption 15 W

**Audio inputs**

Nominal mic input 85 dB SPL

Maximum mic input 115 dB SPL

Nominal headset input -38 dBV

Maximum headset input -8 dBV

**Audio outputs**

Loudspeaker nom. output 72 dB SPL

Headphone nom. output -3 dBV

Headphone max. 0 dBV

Headphone load impedance
(for each earpiece) > 32 ohm < 1 kOhm

Headphone output power
(for both earpieces) 65 mW

**General**

Screen size 7 inch

Screen type TFT

Screen resolution 800 x 480p

Supported NFC tags According to ISO/IEC 14

 Type A (106 kb to 848 kb)

 MIFARE (106 kb)

**Mechanical**

Mounting Tabletop

Dimensions (HxWxD) 104 x 326 x 168 mm

 (4.09 x 12.83 x 6.61 in)

Slope 30 degrees

Weight 1,500 gr (3.31 lb)

Color Traffic black (RAL 9017)

 Silver (RAL 9022)

**Environmental**

Operating temperature +5 ºC to +35 ºC

 (+41 ºF to +95 ºF)

Storage and transport -30 ºC to +70 ºC

temperature (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-IDESK Interpreter desk

## Interpreter desk with video output

The single-user interpreter desk shall have a simplified, intuitive and ergonomic design. Clear positioning of the controls shall allow intuitive operation without mistakes. The Interpreter desk shall provide only relevant information, a single glance will be sufficient for the entire interpreting process. It shall fully comply with ISO 20109.

The device shall have the following features and benefits:

* Simplified, intuitive and ergonomic design
* Assignable buttons for quick access to supporting functions
* Built-in NFC reader for personal presets
* HDMI video output
* Input preset buttons positioned in a vertical direction and clearly separated from the output selection buttons
* Output selection buttons positioned in a vertical direction
* Supports up to 100 languages
* Fully compliant with ISO 20109

**•** Supports up to ten desks per booth

• Provides hot plug and play

• Automatic external headset microphone selection

• Hearing protection for predefined headphones and headsets

• Tactile feedback for all controls

• Shall provide audible feedback and pimples for visually impaired users

• High contrast 7 inch display

• Supports language and system configuration from the interpreter desk’s configuration menu

* Built-in NFC contactless reader to retrieve personal settings

The device shall have the following controls and indicators:

• Headphone rotary volume control

• Headphone rotary bass and treble tone controls

• Loudspeaker rotary volume control

• Floor / auto-relay selection button and LED indicators

• Microphone button with red “on-air” and green “booth not in use” LED indicators

• Mute button

• Red “on-air” LED at the rear

The device shall have the following display features:

* 7 relay language preset buttons, with indicators for selected preset and language: number, abbreviation and quality
* A, B (and C) language output buttons, with indicators for output: selection and state; language: number, abbreviation, engaged

• Rotary control with integrated push button to change settings

• Real-time clock

• Loudspeaker selected language indicator

• Audible feedback active indicator (beeps)

* Microphone or external headset selection indicator

The device shall have the following interconnections:

• Three 3.5 mm headphones / headset sockets TRRS (left side, right side and bottom side)

• Two RJ45 compatible connections for system communication and power. Shall enable loop-through cabling by using system cables or star cabling using standard Cat. 5e cables or better and PoE switches

• USB connector (for future use)

* Connector for pluggable microphones

The Interpreter desk shall have the following technical specifications:

**Electrical**

Power supply 48 VDC

 IEEE802.3at class 4, PoE+

Power consumption 18 W

**Audio inputs**

Nominal mic input 85 dB SPL

Maximum mic input 115 dB SPL

Nominal headset input -38 dBV

Maximum headset input -8 dBV

**Audio outputs**

Loudspeaker nom. output 72 dB SPL

Headphone nom. output -3 dBV

Headphone max. 0 dBV

Headphone load impedance
(for each earpiece) > 32 ohm < 1 kOhm

Headphone output power
(for both earpieces) 65 mW

**Video outputs**

HDMI resolutions 1920 x 1080p (ref. rate 60)

 1280 x 720p (ref. rate 30)

HDMI version 1.4

**General**

Screen size 7 inch

Screen type TFT

Screen resolution 800 x 480p

Supported NFC tags According to ISO/IEC 14

 Type A (106 kb to 848 kb)

 MIFARE (106 kb)

**Mechanical**

Mounting Tabletop

Dimensions (HxWxD) 104 x 326 x 168 mm

 (4.09 x 12.83 x 6.61 in)

Slope 30 degrees

Weight 1,500 gr (3.31 lb)

Color Traffic black (RAL 9017)

 Silver (RAL 9022)

**Environmental**

Operating temperature +5 ºC to +35 ºC

 (+41 ºF to +95 ºF)

Storage and transport -30 ºC to +70 ºC

temperature (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-IDESKVID Interpreter desk with video output

## Flush language selector

The flush language selector shall allow delegates to conveniently listen to the speaker in their preferred language. Language selection shall be straightforward and automatically activated when headphones are connected to the device. The delegate shall be able to scroll through the available languages by pressing the illuminated touch buttons.

The available languages shall be displayed in native characters to enhance readability. To facilitate language selection, if a preferred language for the participant is defined in the system, the language selector shall automatically the defined language.

The volume shall also be adjusted via the illuminated touch buttons. The volume shall be displayed on the device. The display shall automatically turn off when the device is idle.

The device shall have the following features and benefits:

* Native character language indication
* Intuitive operation
* Support for up to 100 languages
* Connection to existing IT infrastructure using standard PoE and network cabling
* Configurable via the PC configuration software application.
* 1.44-inch screen for displaying:
	+ Language selection in original characters.
	+ Language selection in ISO abbreviation form.
	+ Language numbers.
* Star configuration, where each device is connected to a Power over Ethernet compatible switch with an individual standard CAT‑5e (or better) cable.
* Display is off when headphone is not connected.
* The display switches off automatically after not using any buttons for approximately 8 seconds, to minimize distractions from the meeting.

The device shall have the following controls and indicators:

* On top side:
	+ 1.44-inch display with 4 touch buttons.
	+ LED indicators on device showing:
		- Headphone volume control - on the left side
		- Language selector - on the right side

The device shall have the following interconnections:

• 1 x 3.5 mm (0.14 in) headphone sockets stereo jack type.

• 1 x RJ45 compatible connection for system communication and power via PoE.

• 1 x connector for external headphone connection.

The flush language selector shall have the following technical specifications:

**Electrical**

Power supply PoE (44-57 VDC)

Power consumption 2.6 W

Frequency response 100 Hz to 20 kHz (-3 dB at nominal level)

THD at nominal level < 0.1 %

Dynamic range > 90 dB

Signal-to-noise ratio > 90 dB

**Audio inputs**

Nominal mic input 85 dB SPL

Maximum mic input 115 dB SPL

Nominal headset input -38 dBV

Maximum headset input -8 dBV

**Audio outputs**

Headphone nom. output 0 dBV

Headphone max. output 3 dBV

Headphone load impedance > 32 ohm < 1k ohm

Headphone output power 65 mW

**General**

Screen size 36.58 mm (1.44 in)

Screen type LCD

**Mechanical**

Mounting Flush mounted

Dimensions (HxWxD) 100 mm x 56 mmx 5.5 mm

 (39.4 in x 22 in x 2.2 in)

Weight Approx. 95 g (0.21 lb)

Color Traffic black (RAL 9017)

**Environmental**

Operating temperature +5 ºC to +45 ºC

 (+41 ºF to +112 ºF)

Storage and transport -30 ºC to +70 ºC

temperature (-22 ºF to +158 ºF)

Relative humidity < 90 %, > 5%

The product shall be or similar to:

DCNM-FSL Flush language selector

# Headphones

## Lightweight Stereo Headphones

Lightweight stereo headphones shall offer high-quality sound reproduction.

The product shall have the following features and benefits:

* Replaceable ear-pads.
* Separate available solid washable ear-pads.

The product shall have the following interconnections:

* 1 .3 m (51.2 in) cable terminated with 3.5 mm (0.14 in) angled stereo jack plug.

The product shall have the following Technical Specifications:

Electrical

Impedance 32 ohm per earpiece

Audio frequency response 50 Hz to 20 kHz (-10 dB)

Power handling capacity 50 mW

Sensitivity (1 kHz) 98 dB SPL/earpiece at

 1 mW/earpiece

Mechanical

Weight 70 g (0.16 lb)

Color Charcoal (PH 10736)

 with silver

The product shall be or similar to:

* LBB 3443/00 Lightweight Stereo Headphones.
* LBB 3443/50 Set of 100 pairs of replacement ear pads.
* HDP-LWSP Set of 50 pairs solid ear-pads.

## Single Earphone

The product shall have the following features and benefits:

* Ergonomic design for use under the chin.
* Replaceable ear-tips.

The product shall have the following interconnections:

* 1 .2 m (47.2 in) cable terminated with 3.5 mm (0.14 in) stereo jack plug.

The product shall have the following Technical Specifications:

Electrical

Impedance 32 ohm

Audio frequency response 100 Hz to 5 kHz (-10 dB)

Power handling capacity 5 mW

Sensitivity (1 kHz) 114 dB SPL/earpiece at 1

 mW/earpiece

Mechanical

Weight 25 g (0.06 lb)

Color Dark gray

The product shall be or similar to:

LBB 3442/00 Single Earphone.

## High Quality Dynamic Headphones

This high quality dynamic microphone shall

* have a wide frequency range for ensuring high‑quality sound reproduction.
* have a comfortable fit and easy to adjust thanks to ultra-lightweight ergonomic design.
* be hygienic and very easy to clean
* have stainless steel bow retains shape for lifetime

The product shall have the following features and benefits:

* Replaceable ear-pads.

The product shall have the following interconnections:

* 1 .2 m (47.2 in) cable terminated with 3.5 mm (0.14 in) stereo jack plug.

The product shall have the following Technical Specifications:

Electrical

Impedance 32 ohms

Audio frequency response 20 Hz to 20 kHz

Sensitivity 113 +/-3 dB SPL/mW (at 32 ohms) THD: 1% at 1 kHz at 1 mW

Dimensions 199 x 156 mm (7.83 x 6.14 in) Diameter of ear caps 53 mm (2.10 in)Cable diameter 2.5 mm (0.10 in)

Cable length 1. 5 m (4.92 ft)

Plug (stereo gold plated) 3.5 mm (0.14 in)

Mechanical

Weight (with cable) 108 g (0.24 lb)

Color Black with stainless steel

The product shall be or similar to:

* HDP-HQ High Quality Headphones.

## Induction Loop Neckband

The induction loop neckband shall be suitable for use with the receivers.

The induction loop neckband shall have the following physical and electrical characteristics:

|  |
| --- |
| Connection 0.9 m (3 ft) cable with 3.5 mm  (0.14 in) gold-plated jack plug  |
| Impedance 28 ohms at 1 kHz |
| Magnetic Field 100 mA/m 15 cm (6 in) aboveStrength loop at 85 µW 1kHz input (IEC60118-4) 85 μW at 1 kHz input (IEC 60118-4) |
| Weight 45 g (0.10 lb) |
| Color Charcoal with silver |

The induction loop neckband shall be similar to:

HDP-ILN Induction Loop Neckband.

# Control Equipment

## Central device

The “central device” shall route and process the audio and shall supply power to the conference devices. It shall include an intelligent adaptive acoustic feedback suppressor, echo cancellation, and two 5‑band parametric equalizers for optimal speech amplification and intelligibility:

* One parametric equalizer shall be used for the conference device loudspeakers.
* The other parametric equalizer shall be used for an external sound reinforcement system.

The central device shall have two analogue audio inputs:

* One input shall be used for inserting external audio signals into the system to be mixed with the floor signal from the conference devices.
* The other input shall be used for Insertion-mode (to connect external audio equipment between the output and the input of the central control device), or for
* Mix‑minus-mode (to connect the system to another (video) conferencing system).

The central device shall also have two audio outputs:

* One output shall be used to connect an external sound reinforcement system.
* The other output shall be used to connect a recorder system, or for
* Insertion-mode (to connect external audio equipment between the output and the input of the central control device), or for
* Mix‑minus-mode (to connect the system to (video) conferencing equipment).

The central device shall have a built‑in Ethernet switch, so that all devices in the system can be connected together in a network. It shall support loop‑through connection and cable redundancy. The central device shall have no user controls and shall be controlled remotely.

The product shall have the following features and benefits:

* Zero configuration.
* Fully compatible to the Ethernet (IEEE802.3) and OMNEO standard.
* Supports loop‑through connection with cable redundancy.
* Acoustic Feedback Suppression (AFS), echo cancellation and equalization.
* Standby mode (environment friendly)

The product shall have the following controls and indicators:

* Mains switch on the rear to power on the central device.
* Ground‑lift switch.
* LED on the front to show: green (power on), amber (standby), blinking (no connection to the system).
* LED on the rear to show: green (power availability on each powered socket), red (overload per powered socket).
* Ethernet LED’s, yellow and amber for each socket.
* Independent powered sockets; a short circuit on one socket does not influence the other sockets.
* Supports hot plug and play.

The product shall have the following interconnections:

* 2 three‑pole XLR balanced audio line inputs with galvanic separation
* 4 RCA unbalanced audio line inputs
* 2 three‑pole XLR balanced audio line outputs with galvanic separation
* 4 RCA unbalanced audio line outputs
* Mains power supply auto ranging input.
* 1 socket with Ethernet without power, compatible with RJ45.
* Minimal 3 sockets with Ethernet with high power supply compatible with RJ45 to power at least 10 conference devices each socket.
* 1 socket with Ethernet with constant low power supply, compatible with RJ45 for remote switching from standby to operational state by use off a conference device.

The product shall have the following Technical Specifications:

**Electrical**

Supply voltage 100/240 Vac 50-60 Hz

Power consumption 530 W

System supply 48 Vdc

Total power supply 3x 144 W + 15 W

Frequency response 30 Hz – 20 kHz

THD at nominal level < 0.1 %

Dynamic range > 95 dB

Signal–to-noise ratio > 95 dB

Audio input 1

XLR nominal input -18 dBv (+6/- 18dB)

XLR maximum input +18 dBv

Cinch nominal input -30 dBv (+6/- 18dB)

Cinch maximum input +6 dBv

Audio input 2

XLR nominal input +2 dBv (+6/- 18dB)

XLR maximum input +18 dBv

Cinch nominal input -10 dBv (+6/- 18dB)

Cinch maximum input +6 dBv

Audio outputs

XLR nominal output -18 dBv (+8/- 24 dB)

XLR maximum output +20 dBv

Cinch nominal output -30 dBv (+8/- 24 dB)

Cinch maximum output +8 dBv

Mechanical

Mounting Tabletop or mounted in a 19”rack

Dimensions
(H x W x D) For tabletop use, with feet:

 92 x 440 x 400 mm

 (3.6 x 17.3 x 15.7 in)

 For 19” rack use, with brackets:

 88 x 483 x 400 mm

 (3.5 x 19 x 15.7 in)

 Space in front of brackets:

 40 mm (1.6 in)

 Space behind brackets:

 360 mm (14.2 in)

Weight max. 7.62 kg (16.79 lbs)

Color Traffic black RAL9017

 Pearl light grey RAL9022

Environmental

Operating temperature 0 ºC to +45 ºC

 (-32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 96 %, > 5 %

The product shall be or similar to:

DCNM-APS2 DICENTIS Audio Powering Switch.

## Powering device

The “powering device” shall be used in combination with a central device to supply extra power to the network. The built‑in Ethernet switch shall connect all devices in the system together in a network. It shall support loop‑through connection and cable redundancy. The powering device shall have no user controls and shall be controlled remotely.

The product shall have the following features and benefits:

* Zero configuration.
* Fully compatible to the Ethernet (IEEE802.3) and OMNEO standard.
* Supports loop‑through connection with cable redundancy.
* Standby mode (environment friendly).

The product shall have the following controls and indicators:

* Mains switch on the rear to power on the powering device.
* LED on the front to show: green (power on), amber (standby), blinking (no connection to the system).
* LED on the rear to show: green (power availability on each powered socket), red (overload per powered socket).
* Ethernet LED’s yellow and amber for each socket.
* Independent powered sockets; a short circuit on one socket does not influence the other sockets.
* Supports hot plug and play.

The product shall have the following interconnections:

* Mains power supply auto ranging input.
* 1 socket with Ethernet without power, compatible with RJ45.
* 3 sockets with Ethernet with high power supply, compatible with RJ45to power at least 10 conference devices.
* 1 socket with Ethernet with constant low power supply, compatible with RJ45 for remote switching from standby to operational state by use off a conference device.

The product shall have the following Technical Specifications:

Electrical

Supply voltage 100/240 Vac 50-60 Hz

Power consumption. 530 W

System supply 48 Vdc

Total power supply 3x 144 W + 15 W

Mechanical

Mounting Tabletop or mounted in a 19”

 rack

Dimensions
(H x W x D) For tabletop use, with feet:

 92 x 440 x 400 mm

 (3.6 x 17.3 x 15.7 in)

 For 19” rack use, with brackets:

 88 x 483 x 400 mm

 (3.5 x 19 x 15.7 in)

 Space in front of brackets:

 40 mm (1.6 in)

 Space behind brackets:

 360 mm (14.2 in)

Weight 7.4 kg (16.31 lbs)

Color Traffic black RAL9017

 Pearl light grey RAL9022

Environmental

Operating temperature 0 ºC to +45 ºC

 (-32 ºF to +113 ºF)

Storage temperature -20 ºC to +70 ºC

 (-4 ºF to +158 ºF)

Relative humidity < 96 %, > 5 %

The product shall be or similar to:

DCNM-PS2 DICENTIS Powering Switch.

## System server

The system server shall use Intel's newest generation microarchitecture and Microsoft Windows Telecommunications Server Operating System to deliver high performance and stability for conference applications.

The product shall have the following features and benefits:

* Next-level performance with a remarkably small and versatile device for Conference Systems up to 750 seats.
* Pre-installed and configured Windows Server OS, system software and DHCP server to reduce installation time.
* 2 Ethernet ports to separate the system network from the office network.
* Solid state disk to reduce boot time and increase reliability.
* Mounting under a desk, behind a display or in a rack

The product shall have the following specifications:

* Intel® Core ™ i7 8700 processor (3.2 GHz, up to 4.6 GHz with Intel® Turbo Boost technology, 12 MB cache, 6 cores).
* 16 GB DDR4-2666 non-ECC SDRAM (2 x 8 GB).
* 256 GB HP Z Turbo Drive PCIe® SSD.
* 2x 1 Gbps Ethernet adapters.

The product shall have the following Technical Specifications:

Electrical

Power supply 230 W, 89% efficiency, wide-ranging, active PFC Power Supply

Operating voltage range 115-230 VAC

Rated voltage range 100-240 VAC

Rated line frequency 50-60 Hz

Operating line frequency

range 47-63 Hz

Rated input current 3.5 A @ 90 VAC (230 W EPS)

ENERGY STAR

certified Yes

80 PLUS compliant Yes, 90% efficient

FEMP standby power

compliant Yes, with Wake-on-LAN disabled: <1 W in S5- Power Off

Surge tolerant full

ranging power supply

(withstands power

surges up to 2000V) Yes

Mechanical

Form factor Mini form factor

Chassis dimensions:

Standard desktop

orientation

(H x W x D) 58 mm x 216 mm x 216 mm

 (2.28 in x 8. 5 in x 8.5 in)

Environmental

Temperature

 operating 5 °C to 35 °C (40 °F to 95 °F)

 non-operating -40 °C to 60 °C (-40 °F to 140 °F)

Humidity

 operating 10 to 85% relative humidity, non-condensing

 non-operating 10 to 90% relative humidity, non-condensing

Maximum altitude

(non-pressurized)

 operating 5000 m (16,404 ft)

 non-operating 12,192 m (40,000 ft)

The product shall be or similar to:

DCNM-SERVER System server.

## Dante gateway

The gateway shall act as an interface between a network that uses OMNEO streams and a network that uses DanteTM streams.

The product shall have the following features and benefits:

* Combine multiple OMNEO devices into a single DanteTM interface.
* Combine AES70 and standard DanteTM routing.
* Support AES67
* Combine RSTP redundancy with glitch-free redundancy.
* Consolidate multicast traffic between networks.

The product shall have the following functions:

* Combine multiple OMNEO devices into a single DanteTM interface.
* Receive 64 DanteTM streams and send them as 64 OMNEO streams, of which 16 can be encrypted.
* Receive 64 OMNEO streams, of which 16 can be encrypted, and send them as 64 DanteTM streams
* Convert multiple OMNEO encrypted flows with a single unicast or multicast stream into a DanteTM flow with multiple unicast or multicast streams.
* Support static routing with DanteTM controller on the DanteTM side and dynamic routing (AES70) on the OMNEO side.
* Glitch-free redundancy at the DanteTM side and RSTP redundancy at the OMNEO side.

Electrical

Supply voltage 100‑240 Vac 50‑60 Hz in

 48 Vdc out

Input voltage 12-48 VDC 10 W

Mechanical

Audio channels 64 in both directions

Sampling rate 48 kHz

Audio 24-bit

Audio encryption 16x16 channels in both directions

Dimensions (WxHxD) 483 x 44 x 400 mm

With mounting brackets (19 x 1.75 x 15.7 in)

Rack unit 19 in, 1U

Case Steel

Environmental

Operating temperature 5 ºC to +50 ºC

 (41 ºF to +122 ºF)

Storage and transport -30 ºC to +70 ºC

temperature (-22 ºF to +158 ºF)

The product shall be or similar to:

OMN-DANTEGTW Dante gateway.

# Software

## System Software

The “System Software” shall be a platform for controlling the entire conference system and shall include basic functions. It shall be possible to extend the functionality of the system by adding various software options. These software options are described in Section 9.2 through Section 9.11, and include:

* Meeting Preparation and Management
* Participant Database
* Identification at Seat
* Media Sharing
* Camera Control
* Voting at Seat
* Voting Preparation and Management
* Select Language at Seat
* Dual Use
* Software maintenance agreements

The System Software shall be a server/client solution that shall consist of two main components: The “Server Software” and the “Meeting Application”.

**Server Software**

The Server Software shall be a set of Windows services. The individual services shall not have user interfaces and shall run in the background to control and monitor the system. To inform the user, a user interface shall be provided for system state and diagnostics.

The software shall have a license activation module, which shall be required for activating the license of the entire system. Once the Server Software has been configured by means of the Meeting Application, the Server Software shall be able to run autonomic without user intervention.

**Meeting Application**

The Meeting Application shall act as a PC user interface for configuring the system, and for managing and preparing meetings. The software shall be able to:

* run on one or more PCs.
* contain user management for assigning functionality to different users and/or PCs.

The software shall have the following functions:

**Functions that shall be Configurable from the Meeting Application:**

* Automatic discovery of devices.
* Automatic or manual assignment of a device to a seat.
* Setup of chairperson’s seat.
* User management.
* Setup volume of conference device loudspeakers and sound reinforcement output.
* Enable/disable Acoustic Feedback Suppression (AFS).
* 5‑band parametric room equalization.
* User definable priority and summon tones.
* Customer logo to be displayed on the home screen and camera window of the multimedia device

**Webbased synoptic microphone control**

The Server will also host a webserver which allows for webbased synoptic microphone control. The webbased synoptic microphone control shall have the following functionality

* Enabling and disabling of microphones
* Displaying the microphone state of the seat
* Uploading of a background to mimic the room layout
* Automatically scaling the layout to the used target device
* Displaying if the discussion device is in error state
* Updating the user rights automatically upon activating and deactivating meetings
* Displaying participant pictures
* Displaying voting results

**Webserver for meeting documents**

The Server will also host a webserver which allows for storing and retrieving documents related to the meeting. webbased synoptic microphone control. The webserver shall have the following functionality

* Uploading meeting related documents
* Linking webpages and documents to meetings, agenda items

**Functions that shall be accessible from a conference device when it is setup as a chairperson seat:**

* Microphone modes: Open mode automatic; Open mode manual managed; First-in, first-out mode, voice activated mode.
* Number of open microphones: 1 to 25.
* Number of waiting speakers: 0 to 200.
* Enable/disable automatic microphone off after 30 seconds.
* Enable/disable priority tone.
* Master volume control.
* Initiate a summon chime.

When the System Software is ordered, a license shall be sent by e‑mail. The e‑mail shall contain all information for activating the system.

This license shall be required as a minimum for activating the system, including any additional software modules; the additional software modules shall also require their own individual licenses.

If the PC running the software server needs to be replaced, an easy‑to‑use solution shall be provided for activating the replacement PC, without the need to order new software.

The product shall be or similar to:

DCNM-LSYS - DICENTIS System Server Software.

The product shall have the following Technical Specifications:

The PC requirements for the computer running the

services in this system shall be categorized as

follows:

1. Up to 100 devices without identification or participants images
2. Up to 100 devices with identification or participants images
3. Up to 750 devices without identification or participants images
4. Up to 750 devices with identification or participants images.

For each use, there shall be minimal requirements, as listed in the following table:

|  |  |
| --- | --- |
|  | **PC running server software (meeting application, optional):** |
| **Less than 100 devices & without identification or participant images** | * Windows server 2012 R2 64 bits (including .NET Framework 3.5 feature), or:
* Windows server 2016 (including .NET Framework 3.5 feature).
 |
| CPU passmarkRAMFree disk spaceEthernet card | * >= 6000
* 8 GB
* 20 GB
* 1 GB
 |
| **Less than 100 devices with identification or participant images** | * Windows server 2012 R2 64 bits (including .NET Framework 3.5 feature), or:
* Windows server 2016 (including .NET Framework 3.5 feature).
 |
| CPU passmark:RAM:Free disk space:Ethernet card: | * >= 7000
* 16 GB
* 50 GB
* 1 GB
 |
| **Up to 750 devices & without identification or participant images** | * Windows server 2012 R2 64 bits (including .NET Framework 3.5 feature), or:
* Windows server 2016 (including .NET Framework 3.5 feature).
 |
| CPU passmarkRAMFree disk spaceEthernet card | * >= 9000
* 16 GB
* 50 GB
* 1 GB
 |
| **Up to 750 devices with identification or participant images** | * Windows server 2012 R2 64 bits (including .NET Framework 3.5 feature), or:
* Windows server 2016 (including .NET Framework 3.5 feature).
 |
| CPU passmarkRAMFree disk spaceEthernet card | * >= 10000
* 16 GB
* 50 GB
* 1 GB
 |

|  |  |
| --- | --- |
|  | **PC running the meeting application only:** |
| **Less than 100 devices & without identification or participant images** | * Windows 8.1 Pro/Windows 10 Pro 64 bits (including .NET Framework 3.5 feature).
* **Note**: Windows 10 is only suitable for use with the client PC.
 |
| CPU passmarkRAMFree disk spaceEthernet card | * >= 6000
 |
| * 8 GB
 |
| * 20 GB
 |
| * 1 GB
 |

**Switches**

The following minimal requirements shall apply to switches:

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Standard** | **Settings** |
| Gbit Ethernet | IEEE802.3 | Switch latency is maximally 10µSec with Gbit.Valid for both copper and/or fiber ports. |
| Packet forwarding in HW per port >1.2Mpps | n.a. | If SW is responsible for packet switching, this would result in variable latency which is unacceptable. |
| Quality of ServiceWith strict priority | DiffServ | To make sure PTP synchronization packets and audio packets get priority over control packets.OMNEO uses QoS on IP level to avoid synchronization and audio problems on busy networks. Although the system does work without problems on relatively quiet networks (< 10% network load) it is important to configure your network switches correctly.The used QoS is Differentiated Services or DiffServ, which is part of the Type of Services field (ToS) in the IP header. For more details on [DiffServ](http://en.wikipedia.org/wiki/Differentiated_services) & [IP](http://en.wikipedia.org/wiki/IPv4#Header) header, see Wikipedia. |

**Routers**

The following minimal requirements shall apply to routers:

* 1 Gbit or higher Ethernet ports.
* Supports PIM‑DM or Bidirectional PIM.
* Performs IP routing in hardware (i.e. a ‘layer 3 switch’) to minimize the routing delay.
* Packet forwarding rate > 1,000,000 packets per second per port (e.g. 8 Mpps for an 8‑port router).
* Non-blocking backplane per switching port, i.e. 2 Gbit per port (e.g. 16 Gbps for an 8‑port router).
* MAC address table of at least 1000 addresses per directly connected subnet.

## Meeting Preparation and Management

The “Meeting Preparation and Management” software module shall enable the “Prepare” and “Manage” functions in the Meeting Application:

**Prepare**

The prepare function shall enable the preparation of meetings and agendas. During the preparation of an agenda, basic discussion settings shall be defined, and a complete set of discussion settings can be selected from a profile. New discussion profiles for creating personal customized sets of settings can be defined as required, and links to multimedia content shall be added.

**Manage**

The manage function shall enable an operator or chairperson to manage a prepared meeting. Once a meeting has been prepared it can be activated. When a meeting is activated all devices shall automatically show the meeting topic of the activated meeting. The meeting can then be officially opened using the Meeting Application. Depending on system settings, a meeting can be opened automatically after it has been activated; optionally the first agenda topic can be opened automatically once a meeting is opened. It shall be possible to manage a discussion once an agenda is open. Once an agenda topic has been discussed it shall be possible to close it and to open the next agenda topic. It shall be possible to close the meeting once all agenda topics have been processed. During a meeting, it shall be possible to initiate a summon chime, which can be used to page the participants and ask them to return to the meeting room.

The meeting preparation and management shall enable the following features in the meeting application:

**Prepare meeting**

* Prepare meeting.
* Prepare agendas.
* Prepare discussion profiles with links to multimedia content such as documents and illustrations.

**Manage meeting**

* Activate, open, close, and deactivate meetings.
* Open and close agenda topics.
* Initiate a summon chime.
* Manage discussion:
	+ Grant speech; Cancel speakers; Cancel requests;
* Shift requests.
* Change basic discussion setting:
	+ Microphone mode: Open; Override; Voice; Auto-Shift.
	+ Enable/Disable microphone options: Automatic microphone off after inactivity of 30 seconds; Allow microphone off; Ambient microphone.
	+ Maximum number of open microphones can be set.
	+ Enable/Disable priority options: Priority tone; Mute all speakers; Cancel all speakers and participants waiting to speak.
	+ Enable/Disable request to speak options: Show first in request to speak list on seat; Show waiting in request to speak list on seat.
	+ Enable/Disable request list options: Allow request to speak; Allow request to be cancelled.
	+ Maximum number of requests can be set.
	+ Speech timer per speaking turn, to distribute speaking time more evenly amongst participants and make the meeting more efficient.
	+ Speaker viewing options: Camera control; Show newest speaker.

**Post-meeting tools**

When a meeting is opened a meeting notes file shall

automatically be created which lists:

* when the meeting was held.
* which agenda items where discussed and in which order.
* the number of absent and present participants
* which voting rounds were held and in which order

It shall be possible to add this meeting notes file to the minutes of the meeting.

When the software module is ordered, a license shall be sent by e-mail. The e-mail shall contain all information for activating the software module.

The “Meeting Preparation and Management” software module shall also require the “System Software” license.

The product shall be or similar to:

DCNM-LMPM ‑ DICENTIS Meeting Prep & Management.

## Participant Database

The “Participant Database” software module shall enable a comprehensive database of participant information to be compiled in the “Meeting Application”. It shall be possible to enter information before or during a meeting.

A considerable amount of data shall be specifiable for each participant, such as: first name, middle name, last name, etc. For other entries such as title, region and country, a list of options shall be presented by the system. It shall be possible to link a picture to a participant. All information shall be reusable; reentry of information for every meeting shall not be necessary. Furthermore, by using the information in the database, it shall be possible to assign participants to one or more meetings.

It shall be possible to upload an image for a participant. It shall be possible to display this image on a synoptic layout and in the list of participants for a meeting.

For each participant, and for each specific meeting, it shall be possible to grant or deny authorization for discussion, meeting management and priority.

It shall also be possible to define a speaker list of participants for each individual agenda topic.

**User rights**

Once the correct user rights have been defined, it shall be possible to create a participant information entry PC.

As an option, it shall be possible to place this PC at the entrance of a conference hall, so that the registration officer can enter personal information into the database and assign people to the desired meeting.

When ordered, the license shall be sent by e-mail. The e-mail shall contain all information for activating the license.

The “Participant Database” software module shall also require the “System Software” license and the “Meeting Preparation and Management” license.

The product shall be or similar to:

DCNM-LPD - DICENTIS Participant Database.

## Identification at Seat

The “Identification at Seat” license shall enable participates to login and identify themselves in a meeting by use of a self-defined username and/or password. Once logged in, participants shall be automatically recognized and visible within the system, so that other participants immediately know who is speaking. A “select from list” function shall also be available for identifying participants. A login screen shall welcome participants. The use of fixed or free seating positions shall be possible:

When a device has the Identification at Seat license it shall be able to support the following functionality:

* Identification shall be configured in such a way that participants shall only login to seats to which they are assigned, or at any seat.
* Identification shall be done via an NFC-card, username, or selected from a list.
* Verification shall be enabled and done via PIN or password.
* Authentication via Windows Server shall be possible. When this option is enabled, users shall be able to log on to the discussion device with the same user name and password used for Windows. The user name and password shall be validated on Active Directory Server.
* Identification by use of an external system, e.g. a biometric scanning system, shall available via the API.
* The welcome screen on the DICENTIS Multimedia device and DICENTIS Discussion devices with touchscreen shall display personal participant credentials.
* The login screen shall be used to welcome participants to a meeting and assist them in finding their designated seat.
* Number of present and absent participants shall be displayed for meetings and voting rounds. This information shall also be saved in the automatically generated meeting notes and voting round notes.
* Participants shall be forced to log in before taking part in a voting round, which ensures reliable voting results.
* The names of participants shall be displayed at different locations.
* The participant’s name shall correctly displayed in the speaker list and on the camera image on the Multimedia device, even when speaking from a central location, e.g. a rostrum. The ‘select from list’ function shall be implemented for this.
* A discussion device shall be easily disabled if it is not needed for a meeting.
* Individual participants, who have left the meeting and forgot to log off, shall be logged off by an operator using the Meeting application.

An individual license shall be required for each conference device that requires identification at seat.

It shall be possible to disable conference devices that are not being used for a meeting.

When ordered, the license shall be sent by e-mail. The e-mail shall contain all information for activating the license.

The “Identification at Seat” license shall also require: the “System Software” license, the “Meeting Preparation & Management” license, and the “Participant Database” license.

The product shall be or similar to:

DCNM-LSID ‑ DICENTIS Identification at Seat.

## Media Sharing

The “Media Sharing” module shall make it possible to share the display of a remote presentation computer to all displays of the conference devices. The chairperson or meeting manager shall be able to activate the presentation mode using the “PC Application” or using a conference device. When the presentation mode is activated the screen of a remote presentation computer shall be streamed via the network to all conference devices.

When the software module is ordered, a license shall be sent by e-mail. The e-mail shall contain all information for activating the license. “Media Sharing” shall also require the “System Software” license.

The product shall be or similar to:

DCNM-LMS - DICENTIS Media Sharing.

## Camera Control

The “Camera Control” software module shall enable the conference system to be interfaced with Bosch Onvif compliant IP cameras, Panasonic IP cameras and Sony IP cameras. It shall enable fixed or pre‑positioned cameras to be activated during a meeting, so that the current active speaker is displayed on the conference device or hall displays. The software shall control TvOne C2-2355A in combination with TvOne S2-108HD, and Kramer MV-6, and TvOne CORIOmatrix.

When a participant’s microphone is activated, the

camera assigned to that position shall be activated. When none of the microphones is activated, an overview camera shall be automatically activated instead.

The video image shall be shown on the touch screen of the conference devices, but it shall also be possible to display the image in the Meeting Application.

The software shall enable HD-SDI video switching, so that HD‑SDI video signals can be automatically switched and displayed with low-latency on one or more hall displays together with information about the current speaker.

Configuration shall be straightforward, because all Bosch Onvif compliant cameras shall be automatically discovered.

When the software module is ordered, a license shall be sent by e-mail. The e-mail shall contain all information for activating the software module.

The “Camera Control” software module shall also require the “System Software” license.

The product shall be or similar to:

DCNM-LCC ‑ DICENTIS Camera Control.

## Voting at Seat

The “Voting at Seat” license shall enable a voting feature that is suitable for councils and parliaments.

This license shall enable participants to vote during a voting session by pressing the representative button on the display of their conference device.

Participants with voting rights shall be able to select color-coded buttons for:

* “For” (button shall have green shading)
* “Against” (button shall have red shading)
* “Abstain” (button shall have yellow shading)
* “DNPV” (button shall have orange shading)

The shading of these buttons shall be chosen so that color blind people can clearly see which vote they are casting.

The voting results shall be:

* automatically displayed when selected and having a multimedia device or device with touchscreen.
* presented in the form of a colored bar-graph so that results can be quickly interpreted.
* Hidden

A “manage meeting rights” feature shall be available that shall give a conference device, i.e. a participant, full control over the voting procedure, such as:

* Direct all participants to the voting screen
* Open voting
* Hold voting
* Resume voting
* Close voting

An individual license shall be required for each conference device that requires voting. It shall be possible to reuse a “Voting at Seat” license for a new seat if the old seat is deleted from the system.

When ordered, the license shall be sent by e-mail. The e-mail shall contain all information for activating the license.

The “Voting at Seat” license shall also require the “System Software” license.

The product shall be or similar to:

DCNM-LSVT ‑ DICENTIS Voting at Seat.

## Voting Preparation and Management

The “Voting Preparation and Management” license shall enable the preparation and management of one or more voting rounds in the System Software.

**Voting preparation**

The ‘Voting preparation’ feature shall enable a secretary or clerk to prepare and add one or more voting rounds to a meeting. Voting rounds can be prepared immediately and/or updated at a later date. A voting round shall be easily recalled or deleted from a meeting if it is no longer required. During the preparation of a voting round the secretary or clerk shall be able to configure parameters such as:

* Voting reference number.
* Voting subject.
* Description of voting round.
* Sequence of voting rounds (i.e. the order in which voting rounds will be used during a meeting).
* URL (link) for accessing documents stored on the customers’ content management system or Server.
* Voting answer sets that can be changed to suit the country or region. Various answer sets can be selected, for example, ‘Yes’, ‘No’ or ‘For’, ‘Against’, ‘Abstain’, ‘DNPV’.
* Voting timer options. A voting timer can be configured to limit the time allocated for voting. The voting can automatically be ‘put on hold’, ‘closed’, or ‘kept open’ when the allocated time has expired.
* How the results are displayed. A live update of the voting results (totals and/or individual results) can be displayed, voting results can be displayed once voting has closed or is on hold, or only the cast vote of each participant can be displayed on their Discussion device with voting, Discussion device with touchscreen and Multimedia device. There is also an option for secret voting. When secret voting is selected, individual results are not displayed and cannot be retrieved from the Server or via the API. The cast vote can also be hidden to prevent influencing the voting behavior of other participants.
* Different 100% settings can be defined to make it easier to decide whether the voting round is accepted or rejected. These settings determine how the votes are counted in the meeting notes pie chart and in the voting results file (all participants with voting authorization are counted, or all present participants with voting authorization).
* Vote weight can be activated for each voting round. The vote weight can be configured for every participant in the meeting. The option can be used to let participants vote for absent participants (proxy voting) and is possible for all voting types (Secret, Open, and so on).

Voting authorization for participants shall be able to be set for each meeting. Participants not authorized to vote can still take part in proceedings and can view the voting results. A ‘Save settings as default’ feature allows a new voting round to be quickly and accurately created based on the settings of a previously used voting round.

The details of each voting round can be viewed (in fullscreen view) in the Meeting Application and on the

devices.

**Voting management**

The chairperson shall be able to:

* conveniently select a prepared voting round from the voting list and make it ready for immediate use.
* check all details of a voting round before sharing it with the participants.
* recall a voting round if it is no longer required.

If the software module identification is activated:

* the number of present and absent participants is displayed for each voting round.
* The chairperson can force participants to log in before taking part in a voting round, which ensures reliable voting results. This information will also be saved in the automatically generated voting round notes.

Participants can view background information on the voting subject before voting begins. When the chairperson opens the voting round, participants are asked to vote on a proposal by selecting a voting button. During voting, the chairperson can choose to Hold/Resume, Abort, and Close, a voting round.

Buttons are also provided for accepting or rejecting completed voting rounds. Previous and next voting rounds can be conveniently displayed by selecting intuitive buttons at the top of the voting page.

**Voting results**

Voting results shall be able to be displayed in bar charts on the Multimedia device, Discussion device with touchscreen, as well as in the Meeting Application. In synoptic microphone control, voting results can be displayed in a synoptic layout.

Voting data is securely stored on the Server in XML files that have tamper detection. This enables the data to be easily displayed, by use of an XSLT template, for post-voting or post-meeting analysis (e.g. results can be added to the transcription of a meeting). The following information can be readily retrieved:

* Participant’s name and country
* Meeting name and description
* Agenda item subject and description
* Voting round details, including subject and description of the voting round
* Open and closed times of the voting round, including the date
* Total and individual results

Voting data can also be easily accessed by external applications thanks to system APIs.

**Ad hoc voting**

During a meeting, a chairperson shall be able to run an ‘ad hoc’ voting round from the voting’s list view by completing information fields for reference number, subject and description. The results from this voting round are also stored on the Server, and can be retrieved at a later date if needed.

**License requirements**

An individual license shall be required for each conference device that requires prepared voting. It shall be possible to reuse a “Voting Preparation and Management” license for a new seat if the old seat is deleted from the system.

When ordered, the license shall be sent by e-mail. The e-mail shall contain all information for activating the license.

The “Voting Preparation and Management” license shall require the system licenses DCNM‑LSYS,

DCNM‑LMPM, and DCNM‑LPD. DCNM-LSVT seat

licenses shall be required for each DICENTIS multimedia, DICENTIS discussion Extended DICENTIS discussion Voting, the Meeting application, and the API client.

The product shall be or similar to: DCNM-LVPM ‑ DICENTIS Voting Preparation and Management.

## Select Language at Seat

The “Select Language at Seat” license shall enable

the language selection feature of the conference device.

This feature shall enable participants to:

* select the required language from the language list in the conference device. The floor language shall be the first language in the list.
* quickly switch between the floor language and other available languages. The name of the selected language shall be clearly displayed, using the original name and characters.
* listen to the selected language by use of the headphone socket on the conference device.

An individual license shall be required for each conference device that requires language selection.

When ordered, the license shall be sent by e-mail. The e-mail shall contain all information for activating the license.

The “Select Language at Seat” license shall also require the “System Software” license.

The product shall be or similar to:

DCNM-LSSL ‑ DICENTIS Select Language at Seat.

## Dual Use at Seat

It shall be possible to extend the discussion device functionality so it can be used by two participants. The Dual Use at Seat license shall extend the discussion device with dual-use functionality. If the DCNM-LSID and/or DCNM-LSVT licenses are activated, two copies of these licenses shall also be required for each dual-use

Discussion device.

The product shall be or similar to:

DCNM-LSDU ‑ DICENTIS Dual Use at Seat.

## License for 1 Dante stream

The “License for 1 Dante stream” shall enable the sending or receiving of DanteTM audio streams, allowing the interfacing of the conference system with other systems based on DanteTM and providing the ability to record the interpreted languages or to interface with a 3rd party discussion or interpreting system.

This feature shall enable technicians to:

* Configure languages to be received as DanteTM multicast audio streams.
* Configure languages to be sent as DanteTM multicast audio streams.
* Each DanteTM audio stream, input or output, requires 1 DanteTM stream license. If you need to send 2 DanteTM streams and receive 3 DanteTM streams, you will need a total of 5 licenses.
* Configuration can be done using the Meeting Application or via the API.

The product shall be or similar to:

DCNM-LDANTE License for 1 Dante stream.

## Software maintenance agreements

“Software Maintenance Agreements” (SMAs) shall be available for updating licensed system software and seat software, and for applying third‑party compatible updates.

An “Extension Software Maintenance Agreement” shall also be available for upgrading an SMA, so that software modules added at a later date are also included in the software update.

The SMAs shall be available for periods of one, two, and five years. The SMAs shall be free of charge for the first year after activation of the conference system.

# Installation Equipment

## System Cable Assemblies

System Cable Assemblies shall be available in the following lengths:

* 2 Meters – the product shall be or similar to DCNM-CB02-I DICENTIS System Network Cable 2 m.
* 5 Meters – the product shall be or similar to the DCNM-CB05-I DICENTIS System Network Cable 5 m.
* 10 Meters – the product shall be or similar to the DCNM-CB10-I DICENTIS System Network Cable 10 m.
* 25 Meters – the product shall be or similar to the DCNM-CB25-I DICENTIS System Network Cable 25 m.

The prefabricated System Cable Assemblies shall be terminated at both ends with RJ45 type connectors with additional power pins. They shall provide power and network communication and in one cable.

The System Cable Assemblies shall connect a multimedia or discussion device to the audio powering switch or to the powering switch. They shall be used when loop-through and redundant cable connections are required.

The product shall have the following Technical Specifications:

Mechanical

Dimensions (dia) 6.40 mm

Material PVC

Color Traffic black RAL9017

Bending radius 35 mm

## System Installation Cable 250 m

The System Installation Cable shall be used to create custom length installation cables with a maximum length of 100 m (328.084 ft). The System Installation Cable shall be terminated with Installation Cable Connectors. See Section 10.3.

The System Installation Cable shall have the following Technical Specifications:

Mechanical

Dimensions (dia) 6.40 mm

Material PVC

Color Traffic black RAL9017

Bending radius 35 mm

The product shall be or similar to DCNM-CB250-I DICENTIS System Inst. Cable 250 m.

## Connectors for solid core cable

The connectors for solid core cable shall be used with the 250 m (820.2 ft) system network installation cable (DCNM‑CB250-I) to create your own cables, or with the DCNM-CBxx-I cable assemblies to create custom length cables. These connectors are only suited for solid core cables and not for stranded wire cables. The system cable toolkit (DCNM‑CBTK) is used to connect the connectors.

The product shall be or similar to:

DCNM-CBCON-I Connectors for solid core cable

## System Cable Toolkit

The System Cable Toolkit shall contain two unique tools for connecting:

* Installation Cable Connectors to System Installation Cables.
* Network Cable Connectors to System Network Cables.

The product shall be or similar to: DCNM‑CBTK.

## Cable couplers

The cable coupler shall enable Technicians to connect DICENTIS cables without the need for special tools.

The cable coupler can be applied in these situations:

* Connect two cables so you can easily increase cable length
* Connect two cables, where one is always present and ends in a “floor pod” and the other cable is only connected when it is required (for example, a rostrum microphone which will not always be used)
* Interconnect cable with standard CAT5-E cable + power cable so you can comply with local regulations
* Interconnect cable with standard CAT5-E cable + a (non Bosch) 48VDC power supply close to the devices

The product shall be or similar to: DCNM‑CBCPLR.

## On-air and telephone interface

This accessory shall be connected to the interpreter desk and shall have 2 functions: to control a booth on-air indicator outside the booth, and to display on the interpreter desk that the telephone outside the booth is ringing.

The accessory shall provide a galvanic separation between the external interfaces and the interpreter desk. It shall be connected to the Interpreter desk using a USB 2.0 Type A-B cable.

The product shall have the following features and benefits:

* Output contact to control a booth on-air LED.
* Input contact from a connected telephone system ringing indicator.
* Galvanic separation of contacts

The product shall have the following Technical Specifications:

Electrical

Output:

 Supply voltage 50 VDC

 Maximum switching

 current 1 A

Input:

 Inactive < 1 VDC

 Active > 3 VDC

 Max. 24 VDC

Mechanical

Mounting Using two 2.5 mm screws or cable tie

Dimensions 23.2 mm x 77.3 mm x 30.1 mm
(H x W x D) (0.91 in. X 3.04 in. x 1.18 in.)

Weight 0.04 kg (0.08 lb)

Color Jet black (RAL 9005)

Environmental

Operating temperature 0 ºC to +45 ºC

 (32 ºF to +113 ºF)

Storage and transport -20 ºC to +70 ºC

temperature (-4 ºF to +158 ºF)

Relative humidity < 96 %, > 5 %, non-condensing

The product shall be or similar to: DCNM‑IDESNKINT On-air & teleph. DCNM-IDESK.

## Transport case for 6x DCNM-MMD

The ‘Transport case’ shall be able to store and protect:

* six DICENTIS multimedia devices,
* six high‑directive microphones,
* six short or long stem microphones, and has a compartment for cables.

The Transport case shall have:

* specially molded packing, on the inside, to accommodate the components.
* a handle on the top and sides.
* a retractable handle and roller wheels for ease of transportation.
* trigger release latches.
* two metal‑reinforced holes for locking the transport case with padlocks.

The Transport case shall have the following Technical Specifications:

Mechanical

Dimensions (H x W x D) 318 x 801 x 529 mm

 (12.52 x 31.54 x 20.83 in)

Weight 11 kg (24.25 lb)

(without equipment)

Color (case exterior) Black

The product shall be or similar to: DCNM‑FCMMD Transport case for 6x DCNM-MMD.

## Transport case for 10x DCNM-xD

The ‘Transport case’ shall be able to store and protect:

* ten DICENTIS discussion devices,
* ten high‑directive microphones,
* ten short or long stem microphones, and has a compartment for cables.

The Transport case shall have:

* specially molded packing, on the inside, to accommodate the components.
* a handle on the top and sides.
* a retractable handle and roller wheels for ease of transportation.
* trigger release latches.
* two metal‑reinforced holes for locking the transport case with padlocks.

The Transport case shall have the following Technical Specifications:

Mechanical

Dimensions (H x W x D) 318 x 801 x 529 mm

 (12.52 x 31.54 x 20.83 in)

Weight 11 kg (24.25 lb)

(without equipment)

Color (case exterior) Black

The product shall be or similar to: DCNM‑TCD Transport case for 10x DCNM-xD.

## Transport case for 2x DCNM-IDESK

The ‘Transport case’ shall be able to store and protect:

* two Interpreter desk devices with short microphones attached, and has a compartment for accessories.

The Transport case shall have:

* specially molded packing, on the inside, to accommodate the components.
* a large compartment for stowing accessories such as headsets, headphones and tabletop reading‑lights.
* cushion grip handles.
* trigger release latches.
* two metal‑reinforced holes for locking the transport case with padlocks.

The Transport case shall have the following Technical Specifications:

Mechanical

Dimensions (H x W x D) 225 x 618 x 495 mm
(8.86 x 24.33 x 19.49 in)

Weight 5.85 kg (12.90 lb)

(without equipment)

Color (case exterior) Black

The product shall be or similar to: DCNM‑TCIDESK Transport case for 2x DCNM-IDESK.

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