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| CCS 1000 D Digital Discussion System |
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| en Architect’s & Engineer’s Specifications |

**About this Document**

**Purpose**

When preparing a specification, tender or quotation for a Bosch CCS 1000 D Digital Discussion 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**

This Architect’s and Engineer’s Specifications contains the functional description specific for the

Bosch CCS 1000 D Digital Discussion 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.

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# Document history

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| Release date | Doc version | Reason |
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|  |  | New section added: 4.2 |
| 2017.10 | V1.5 | Sections moved:  Sections 4 and 5 exchanged. |
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# Introduction

The system shall be a plug-and-play conferencing system that shall be ideally suited for small to medium-sized meeting areas, such as town halls, local business centers, and courtrooms.

The system shall consist of:

* The ‘Control Unit’. See Section 3.
* The web browser application for viewing and managing/configuring system settings.
* ‘Discussion Devices’, available with a short or long stem fixed microphone – a Discussion Device shall be configurable as a participants device or a chairperson’s device. The system shall be extendable up to 245 Discussion Devices by use of Extension Units.
* Auxiliary components, such as: cable clamps, extension cables, cable locking clamps, and Transport Case for one Control Unit and 6 Discussion Devices.
* Optional peripheral equipment that can be connected to the system, such as audio equipment, and system cameras.
* Interface with third party applications via the REST-API.

# Control Units

The Control Unit shall be the main component of the system. There shall be two types of Control Unit:

* The ‘Control Unit’ (that shall be the same as or similar to CCSD‑CU). See Section 3.1.
* The ‘Control Unit with digital recording and Digital Acoustic Feedback Suppression (DAFS)’ (that shall be the same as or similar to CCSD‑CURD). See Section 3.2.

The Control Unit shall:

* supply DC power to all Discussion Devices connected to the system.
* provide an interface for connecting Discussion Devices and peripheral equipment, such as Extension Units.
* provide an interface for setting system parameters, including a web browser application.
* provide an interface for recording discussions (CCSD‑CURD only).
* monitor and control the discussion system.

## Control Unit

The Control Unit shall have the following features and benefits:

* Plug-and-play functionality for quick and easy connection of Discussion Devices.
* Intuitive touch-buttons on the front panel for easy configuration and operation purposes.
* Intuitive LED indicators for clear and immediate feedback on the system settings.
* Web browser control – it shall be possible to use a web browser application to view and manage system settings.
* Supply power (extendable) for 85 Discussion Devices.
* System control up to 245 Discussion Devices.
* Simultaneous activation of loudspeaker and microphone for enabling face-to-face meeting feel.
* Interruption mode for enabling the Discussion Device regardless of the number of open microphones.
* Standby mode to set the Discussion Devices to standby, e.g. during breaks, and for energy saving purposes.
* Possibility to automatically shut down the CU and connected devices, after 2 hours of inactivity, for energy saving purposes.
* Hot swap of Discussion Devices, without having to power down the system.
* Interface or build custom applications for remote control of the system via the REST-API.

The CU shall have the following capacitive touch buttons and LED indicators:

* 24 VDC power on/off button with red/green LED indicator.
* Plus/minus buttons and green LED indicators for setting the volume range of all connected Discussion Devices.
* Microphone-mode selection button and green LED indicators for selecting one of the following microphone operating modes: ‘open mode’, ‘override mode’, ‘voice activation mode’, and ‘push to talk (PTT) mode’.
* Number of Open Microphones (NOM) button and green LED indicators for selecting the number of microphones that can be activated at the same time. It shall be possible to select up to four open microphones at the Control Unit.

The Control Unit shall have the following connections at the rear of the unit:

* 1 x 4-pole circular female 24 VDC power input connector.
* 2 x 6-pole circular female connectors for loop-through connection of 40 Discussion Devices.
* 1 x RJ45 Ethernet connector for communication with the web browser application.
* 1 x 3-pole XLR female microphone input connector with phantom supply.
* RCA input for ‘Floor’ (i.e. external audio source, such as a CD or DVD player).
* RCA output for a ‘sound reinforcement system’.
* RCA input/output for either:
  + ‘Recorder’ for connecting an external recorder.
  + ‘Insertion’ for connecting an external audio processor.
  + ‘Telephone/mix‑minus’ for allowing a remote participant to join a discussion via a telephone/video connection.
  + ‘Participant loudspeaker’ for distributing the participant loudspeaker signal to a sound reinforcement system.

### Microphone operating modes

The following four modes shall be selectable by pressing the microphone mode button on the front panel of the CU.

In all modes it shall be possible to limit the maximum Number of Open Microphones (NOM). At least four microphones shall be selectable on the CU. If the web browser application is used, it shall be possible to select a maximum of ten microphones.

* **Open mode** – shall allow participants to join the discussion by pressing their microphone buttons. When the maximum number of open microphones is reached, the next participant that presses their microphone button shall be added to a ‘waiting list’. The first participant in the ‘waiting list’ shall be allowed to speak when an activated microphone is disabled.
* **Override mode** – shall allow participants to override each other by pressing their microphone buttons. When the maximum number of open microphones is reached, the next participant that presses their microphone button shall deactivate the microphone that has been activated for the longest time (the chairperson’s microphone shall not be included in the number of open microphones and, therefore, cannot be overridden by a participant).
* **Voice activation mode** – shall allow participants to activate their microphones by speaking into them. It shall be possible to temporarily mute a microphone by pressing and holding down the microphone button.
* **Push to talk (PTT) mode** – shall allow participants to speak by pushing and holding in their microphone buttons. A microphone shall be deactivated when the microphone button is released. The maximum number of participants that can speak shall be determined by the number of open microphones.

### Technical Specifications

The ‘Control Unit’ shall have the following Technical Specifications:

**Electrical**

|  |  |
| --- | --- |
| Mains voltage | 100 to 240 VAC ± 10% |
| Current consumption | Maximum 0.6 A (100 VAC) to 0.2 A (240 VAC) |
| DC supply to Discussion Devices | 24 V ± 1 V (current limited) |
| Number of Discussion Devices per Control Unit | Max. 40 devices per trunk connector |
| Discussion Device loudspeakers volume control | 15 steps of 1.5 dB (starting from -10.5 dB) |
| Limit threshold level to unit | 12 dB above nominal level |
| Gain reduction due to number of open microphones (NOM) | 1/SQRT (NOM) |
| Sample rate | 44.1 kHz |

**Total harmonics**

|  |  |
| --- | --- |
| Nominal input (85 db SPL) | < 0.5% |
| Max. input (110 db SPL) | < 0.5% |

**Audio inputs**

|  |  |
| --- | --- |
| XLR nominal mic. input | -56 dBV |
| XLR maximum mic. input | -26 dBV |
| RCA nominal input | -24 dBV (+/- 6 dB) |
| RCA maximum input | +6 dBV |
| S/N | > 94 dBA |
| Frequency response | 30 Hz to 20 kHz |

**Audio outputs**

|  |  |
| --- | --- |
| RCA nominal output | -24 dBV (+6/- 24 dB) |
| RCA maximum output | +6 dBV |
| S/N | > 102 dBA |
| Frequency response | 30 Hz to 20 kHz |

**Mechanical**

|  |  |
| --- | --- |
| Dimensions including feet (H x W x D) | 45 x 440 x 200 mm (1.8 x 17.3 x 7.9 in)  19” wide, 1 RU high |
| Height of feet | 5.5 mm (0.2 in) |
| Mounting | Tabletop  19-inch rack |
| Weight (CCSD‑CU) | Approx. 3.2 kg (7.1 lb) |
| Weight (CCSD‑CURD) | Approx. 3.4 kg (7.5 lb) |
| Material (top) | Painted metal |
| Material (base) | Painted metal |
| Color (top) | Traffic black (RAL 9017) matt-gloss |
| Color (base) | Traffic black (RAL 9017) matt-gloss |
| Rim | Pearl light grey (RAL 9022) matt-gloss |

**Environmental**

|  |  |
| --- | --- |
| Operating temperature | 5 ºC to +45 ºC  (+41 ºF to +113 ºF) |
| Storage temperature | -40 ºC to +70 ºC  (-40 ºF to +158 ºF) |
| Relative humidity | 5% to 98% non-condensing |

## Control Unit with recording and DAFS

This version of the Control Unit shall have the following additional features:

* Built-in digital recorder with internal memory and USB recording.
* Built-in loudspeaker and headphone socket for listening to recorded discussions before replaying them to the Floor, or listening to recordings.
* Additional capacitive touch buttons and LED indicators for:
  + CU loudspeaker volume (or headphones volume, if connected).
  + Start, Pause (hold), and Stop recording.
* Built-in Digital Acoustic Feedback Suppression (DAFS).
* USB connector on front of unit for connecting a USB memory stick.
* 3.5 mm (0.14 in) stereo headphone socket.
* Micro USB connector on rear of unit for transferring internal memory (recordings) to a PC.
* Four additional RCA outputs for individual microphone recording, e.g. for recording individual speakers in a courtroom.

### Built-in digital recorder

The built-in recorder shall enable discussions to be recorded in the MP3 format to the internal memory or a USB memory stick with at least a capacity of 128 GB:

* **Internal memory ‑** recordings shall be automatically stored in the internal memory unless a USB memory stick is connected to the USB connector at the front of the CU. The internal memory shall be able to record up to 8 hours discussion.
* **USB memory stick –**recordings shall be automatically saved to a USB memory stick when it is connected to the CU. A USB memory stick of 128 GB shall be able to record up to 4,000 hours discussion.

Recordings can be saved per hour or can optionally be saved for the entire meeting duration.

LED indicators shall inform users when data is being recorded to the internal memory or a USB memory stick. The appropriate LED indicator shall be automatically selected when a USB memory stick is inserted or removed from the USB connector.

Three short beeps and a red flashing LED shall indicate when 5 minutes of recording are left.

A long beep and a red/green flashing LED shall indicate when it is not possible to record a discussion (i.e.: internal memory full and USB memory stick not connected to the CU, USB memory stick full or damaged).

### Technical Specifications

The ‘Control Unit with recording and DAFS’ shall have the same technical specifications as the ‘Control Unit’ (see Section 3.1.2), as well as the following technical specifications:

**Recorder**

|  |  |
| --- | --- |
| Recording/ Playback  (bit rate) | 64, 96, 128, 256 Kbit/sec |
| Recording/ Playback (sample frequency) | 44.1 kHz |

**Monitoring loudspeaker**

|  |  |
| --- | --- |
| Nominal output | 72 dB SPL |
| Frequency response | 200 Hz to 12.5 kHz |
| Gain range mute | -10.5 to +12 |

**USB memory stick compatibility**

|  |  |
| --- | --- |
| SanDisk USB memory stick | Formatted with FAT32 file system.  Maximum size: 128 GB |

**Recording capacity in hours**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Bite rate | Internal memory hours | USB memory stick hours | | | |
| 16 GB | 32 GB | 64 GB | 128 GB |
| 64 | 8 hrs | 500 | 1000 | 2000 | 4000 |
| 96 | 5 hrs | 350 | 700 | 1400 | 2800 |
| 128 | 4 hrs | 250 | 500 | 1000 | 2000 |
| 256\* | 2 hrs | 125 | 250 | 500 | 1000 |

\* Supported when recording floor only.

## 19-Inch Rack-Mounting Set

This set shall consist of brackets and other necessary fixings to enable the CU to be mounted in a 19-inch rack system.

# Web browser application

It shall be possible to use a web browser application installed on a tablet, laptop or PC for viewing and managing/configuring system settings, such as camera settings, microphone management, and digital recording options.

The web browser application shall be applicable for use with the following most commonly used web browsers, namely:

* Google Chrome
* Mozilla Firefox
* Internet Explorer
* Safari
* Opera

To prevent unauthorized access to system

settings, separate login rights shall be provided for users. Multiple users can access the web browser at the same time.

Configuration changes made in the web browser application shall be automatically updated in the CU. Likewise configuration changes made at the CU shall be updated in the web browser application.

All correctly stored settings shall still be available after a controlled or unexpected power down of the system. If an unexpected power down of the system takes place during recording, the recording shall still be available when power is reapplied to the system.

## 

# Contribution Equipment

## Discussion Device

The Discussion Device shall enable participants to take part in a discussion by speaking into a microphone and listening to proceedings on a loudspeaker. The device shall have the following features and benefits:

* Plug-and-play functionality.
* Compact, attractive, ergonomic design, with LED indicator in the Discussion Device and in head of microphone.
* Choice of short or long fixed microphone with flexible stem.
* Loudspeaker integrated into front of device.
* Built-in headphone socket with output level control.
* Automatic level reduction when microphone is activated (configurable via web browser application of Control Unit): prevents acoustic feedback from headphone to microphone.
* Configurable as a participant or chairperson’s device: changeable microphone buttons and concealed slide switch at the bottom of the device for configuration purposes.
* GSM immunity.

The device shall have the following user controls and indicators:

* Microphone button.
* Color-coded LED indicator above microphone button for showing the status of the device:
  + White (‘Possible‑To‑Speak’) shall indicate that the microphone will be active immediately after pressing the microphone button.
  + green shall indicate that the participant has pressed the microphone button and the request to speak has been added to the waiting list.
  + green flashing shall indicate that the participant is first in the waiting list, i.e. next in line to speak.
  + red shall indicate that the microphone is active.
* Color-coded light-ring indicator in head of microphone: green shall indicate that a request-to-speak has been added to the waiting list; green flashing shall indicate that the participant is first in the waiting list; red shall indicate that the microphone is active.
* Rotary thumbwheel on side of device for adjusting volume of connected headphones.
* Concealed initialization button at base of device for re-assigning the network address.
* Concealed slide-switch at base of Discussion Device for configuring device as a participant device or chairperson’s device. To prevent accidental operation, it shall only be possible to set the switch with a tool, i.e. bent paperclip.
* Chairperson’s configuration only – separate microphone button and priority button.

The chairperson’s device shall enable the user to function as the chairperson at a conference or meeting. The chairperson’s microphone shall be activated when the priority button is pressed and held in. All currently active participant microphones shall be muted, allowing the chairperson to take control of the meeting. A chime shall be sounded to announce that the chairperson is about to speak. The device shall have the following connections:

* 1 x 6-pole circular female connector at rear of device with cable locking recess
* 1 x 3.5 mm (0.14 in) stereo headphone socket on side of device
* 1 x 2 m (78.7 in) cable with a 6-pole circular male connector with cable lock

After connecting the Discussion Device to the system for the first time, it shall be possible to initialize the device by pressing the microphone button or the initialization button at the bottom of the device.

The Discussion Devices shall be the same as or similar to:

* CCSD-DS (Discussion Device with short microphone).
* CCSD-DL (Discussion Device with long microphone).

### Technical Specifications

The ‘Discussion Device’ shall have the following Technical Specifications:

**Electrical**

|  |  |
| --- | --- |
| Frequency response | 200 Hz to 12.5 kHz |
| Headphones load impedance | > 32 ohms < 1k ohm |
| Loudspeaker nominal output | 72 dB SPL |

**Mechanical**

|  |  |  |
| --- | --- | --- |
| Dimensions device without microphone  (H x W x D) | 64 x 203 x 146 mm (2.5 x 8.0 x 5.7 in) | |
| Height with microphone in horizontal position | 130 mm (5.1 in) | |
| Length of microphone from mounting surface | CCSD‑DS | 310 mm (12.2 in) |
| CCSD‑DL | 480 mm (18.9 in) |
| Weight | Approx. 1 kg (2.2 lb) | |
| Mounting | Tabletop (portable or fixed) | |
| Material (top) | Plastic ABS+PC | |
| Material (base) | Metal ZnAl4 | |
| Color (top) | Traffic black (RAL 9017) matt-gloss | |
| Color (base) | Pearl light grey (RAL 9022) matt-gloss | |

**Environmental**

|  |  |
| --- | --- |
| Operating temperature | 0 ºC to +35 ºC  (+32 ºF to +95 ºF) |
| Storage temperature | -40 ºC to +70 ºC  (-40 ºF to +158 ºF) |
| Relative humidity | 15% to 90% |
| Air pressure | 600 to 1100 hPa |

## Extension Unit

It shall be possible to use one or more Extension Units in combination with a CCS 1000 D Control Unit to supply additional power to the CCS 1000 D Digital Discussion System.

A single Extension Unit shall be able to provide power for up to 85 additional Discussion Devices. It shall be possible to connect a maximum of 245 Discussion Devices to the CCS 1000 D Digital Discussion System by using Extension Units.

The Extension Unit shall have the following features and benefits:

* Easy system setup:
  + The Extension Unit shall have the same outer dimensions as the Control Unit, allowing both units to be conveniently mounted in the same 19-inch rack.
  + The built‑in splitter shall allow for installation at any convenient point in the system, including loop‑through for cascading Extension Units.
  + Six-pole circular connectors shall enable quick and easy connection to other system components and cables.
* Short-circuit protection: A short circuit on one output shall automatically disconnect the power supply from the other output sockets. The Extension Unit shall remain powered up.
* Automatic power up: For ease of use, the Extension Unit shall be switched on and off automatically with the Control Unit. The Extension Unit shall have a 24 VDC power on/off, red/green LED indicator.

The Extension Unit shall have the following connections at the rear of the unit:

* 1x 2 meter cable with 6‑pole circular male connector for connection to the Control Unit or previous component in the daisy-chain.
* 1x 6‑pole circular female connector for trunk connection of the CCS 1000 D components (maximum of 40 components per trunk).
* 2x 6‑pole circular female connectors for tap-off connection of the Discussion Devices (maximum of 40 Discussion Devices per tap-off, with a maximum of 85 Discussion Devices per Extension Unit).
* 1 x 4-pole circular female 24 VDC power input connector.

The Extension Unit shall be the same as or similar to CCSD-EXU (System extension unit).

**Electrical**

|  |  |
| --- | --- |
| Supply voltage Adaptor | 100 to 240 VAC, 50/60 Hz |
| Current Consumption voltage Adaptor | 1.9 A (100 VAC) to 1 A 240 (VAC) |
| DC voltage Control Unit | 24 V, 6.0 A |
| Maximum number of Discussion Devices per Extension Unit | 40 Discussion Devices per trunk/tap-off  85 Discussion Devices in total  24 V, Max 5.2 A (short-circuited protected) |

**Mechanical**

|  |  |
| --- | --- |
| Dimensions including feet (H x W x D) | 45 x 440 x 200 mm (1.8 x 17.3 x 7.9 in)  19” wide, 1 RU high |
| Height of feet | 5.5 mm (0.2 in) |
| Mounting | Tabletop or 19” rack |
| Weight | Approx. 4.12 kg (9.1 lb) |
| Material (top and base) | Painted metal |
| Color (top and base) | Traffic black (RAL 9017) matt-gloss |
| Rim front panel | Pearl light grey (RAL 9022) matt-gloss |

**Environmental**

|  |  |
| --- | --- |
| Operating temperature | 5 ºC to +45 ºC  (+41 ºF to +113 ºF) |
| Storage and transport temperature | -40 ºC to +70 ºC  (-40 ºF to +158 ºF) |
| Relative humidity | 5% to 98% non-condensing |

## Extension Cable

The Extension Cables shall have a 6 mm (0.24 in) diameter Gray PVC sheath, and shall be the same as or similar to:

* LBB 4116/02 – Extension Cable 2 m (6.6 ft) terminated with connectors.
* LBB 4116/05 – Extension Cable 5 m (16.0 ft) terminated with connectors.
* LBB 4116/10 – Extension Cable 10 m (33.0 ft) terminated with connectors.
* LBB 4116/15 – Extension Cable 15 m (49.2 ft) terminated with connectors.
* LBB 4116/20 – Extension Cable 20 m (66.0 ft) terminated with connectors.
* LBB 4116/25 – Extension Cable 25 m (82.0 ft) terminated with connectors.

It shall be possible to make custom lengths of extension cable by using the LBB 4116/00 – 100 m (328 ft) roll of cable without connectors. The LBB 4119 set of connectors shall be used to terminate custom cables made from the LBB 4116/00 roll of cable.

## Cable Locking Clamps

The Cable Locking Clamps shall be the same as or similar to: LBB 4117/00 – set of 25 cable locking clamps. A set of Cable Locking Clamps shall match the male and female cable connectors, such as those on the extension cables. Each male/female connector shall require one clamp.

## Cable Clamp

The Cable Clamp shall secure loop‑through cables to the next Discussion Device. Each male/female connector shall require one cable clamp.

## System camera

The system shall be able to native support communicate with at least six HD SDI conference dome cameras for showing the active speaker. Switchers shall be supported.

The web browser application (see section 4) shall be used to:

* detect and select connected system cameras.
* define camera pre-positions.

## Transport Case for 6 Discussion Devices and one Control Unit

The Transport Case shall be able to protect 6 Discussion Devices with short or long microphones and one Control Unit. Storage space for the device cables, CU power supply adapter, and other accessories shall be provided.

The inside of the Transport Case shall have specially molded packing to accommodate the components. The Transport Case shall have a handle on the top and side, and two wheels on the underside for ease of transportation.

There shall be two separate locks for locking the case. The keys shall be included.

The Transport Case shall be the same as or similar to CCSD-TC2 (Transport Case for CCSD-CU and

6x CCSD-D).

### Technical Specifications

The ‘Transport Case for 6 Discussion Devices and one Control Unit’ shall have the following Technical Specifications:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 560 x 795 x 235 mm  (22.0 x 31.3 x 9.3 in) |
| Weight (empty) | 6 kg (13.2 lb) |
| Material (body) | 3 mm (0.12 in) ABS |
| Material (rim) | Aluminum |
| Color (body) | Black (RAL9004) |
| Color (rim) | Silver |

## Transport Case for 10 Discussion Devices

The Transport Case shall be able to protect 10 Discussion Devices with short or long microphones. Storage space for the device cables shall be provided.

The inside of the Transport Case shall have specially molded packing to accommodate the components. The Transport Case shall have a handle on the top and side, and two wheels on the underside for ease of transportation.

There shall be two separate locks for locking the case. The keys shall be included.

The Transport Case shall be the same as or similar to CCSD-TCD (Transport Case for 10x CCSD-D).

### Technical Specifications

The ‘Transport Case for 10 Discussion Devices shall have the following Technical Specifications:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 560 x 795 x 235 mm  (22.0 x 31.3 x 9.3 in) |
| Weight (empty) | 6 kg (13.2 lb) |
| Material (body) | 3 mm (0.12 in) ABS |
| Material (rim) | Aluminum |
| Color (body) | Black (RAL9004) |
| Color (rim) | Silver |

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