DCN Next Generation

Interpretation System

Data Brochure

Communication you can rely on

BOSCH

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Interpretation System

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1. Introduction

Digital Congress Network

World's first digital congress interpretation system, upgraded for even higher performance
The Bosch DCN Next Generation Interpretation System brings the benefits of innovative digital technology to interpretation systems. Digital signal processing and transmission via a simple network system greatly improves audio quality and simplifies operation and installation.

DCN Next Generation Interpretation System provides flexible management of facilities from small gatherings with only a few languages to large assemblies with as many as 32 languages. The system offers versatility, high audio quality with 20 kHz audio bandwidth, and data transmission security while providing complete control over conference proceedings.

Modular system approach
By simply daisy chaining the modular DCN Next Generation Interpreter and language channel selector units, any configuration can be put together. The modular structure of the system means any level of conferencing can be created without difficulty. Systems can be easily expanded by adding components and PC control with software modules.

Range of equipment
The range of DCN Next Generation Interpretation System products include central control units, simultaneous interpretation and language distribution equipment, application-specific software modules, information provisions, and installation equipment. This can be complemented by external equipment such as PCs, video screens, booster amplifiers, and loudspeakers, all of which are fully compatible and easily integrated into the DCN Next Generation Interpretation System.

DCN Next Generation Interpretation System network

The building blocks of DCN
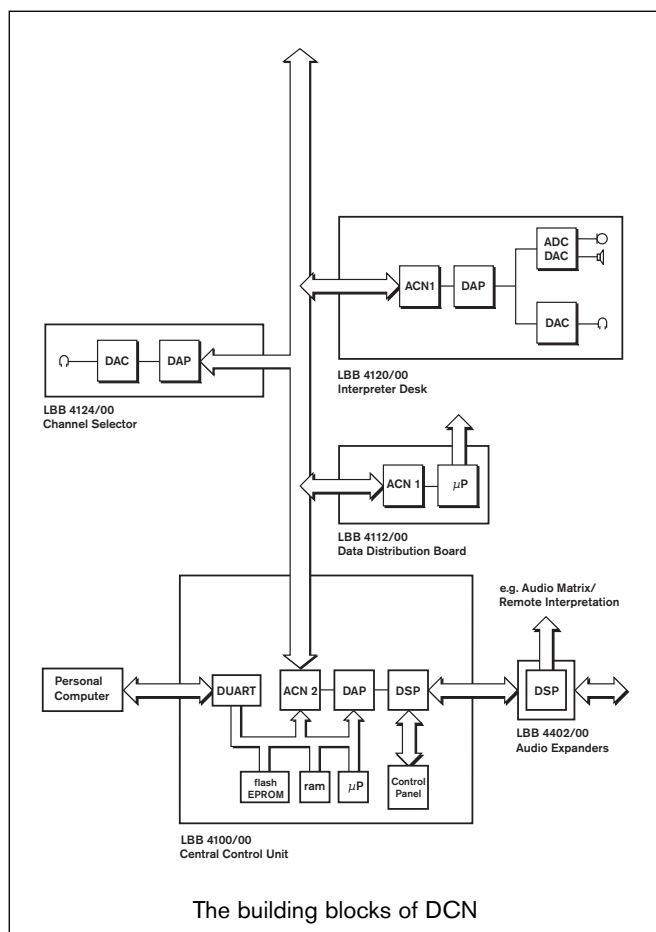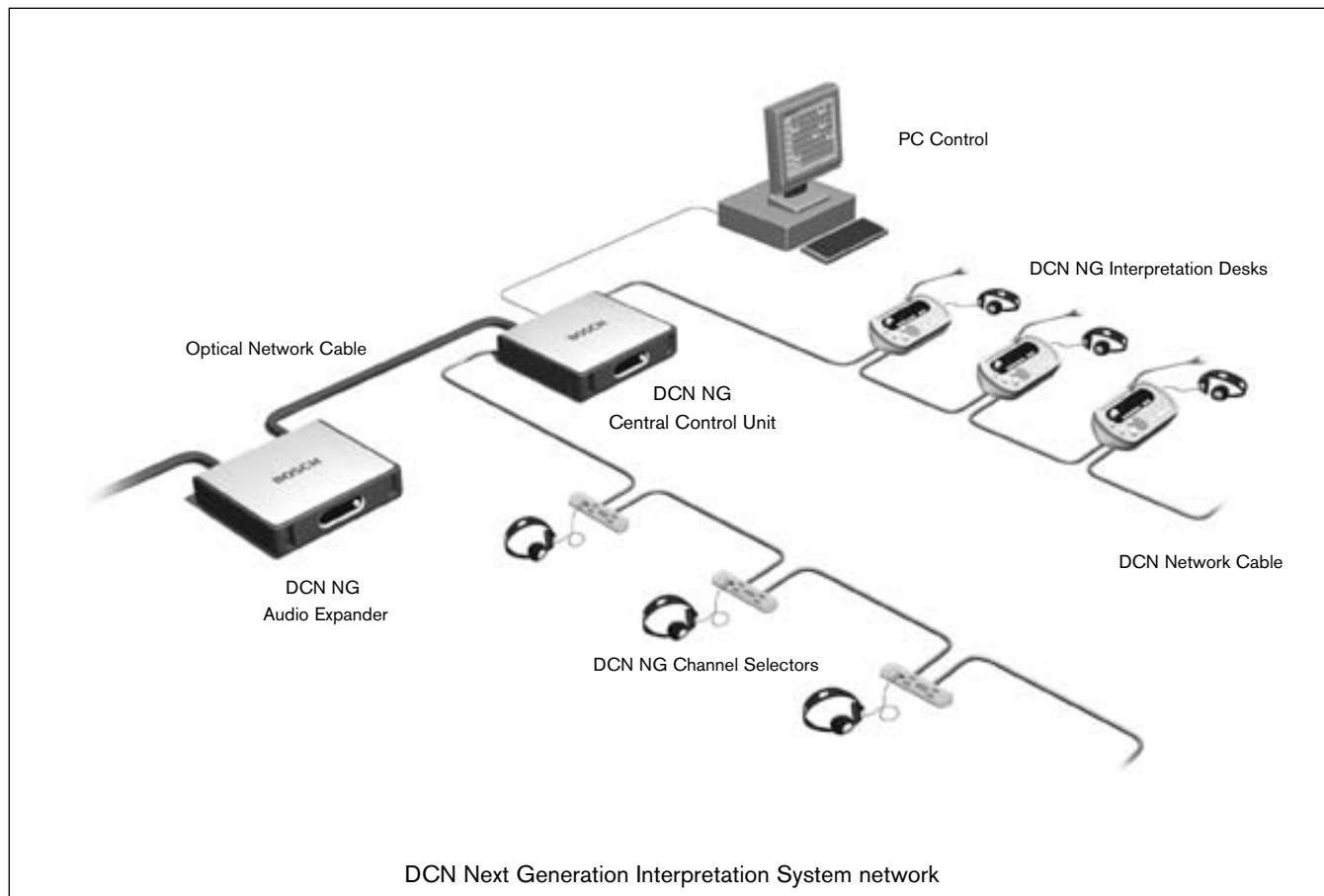
The diagram left shows how the building blocks of the DCN Next Generation fit together. The Audio Communication Network (ACN) family of protocol converter chips is simply connected to the network cabling carrying the digital signal.

The dedicated logic ICs, in combination with analogue-to-digital and digital-to- analogue converters, convert the digital signal from the DCN Next Generation to audio, and convert the contributor's audio signal to digital, ready for protocol conversion by the ACN chip.

Audio Expanders

A new addition to the DCN Next Generation Interpretation System is the ability to connect audio expanders. This makes it possible to extract and insert audio into the system. These audio expanders are con-nected to the CCU via the optical network cable. The audio expander can be used to record and distribute the floor signal and available languages from the system. A special function of the audio expander enables the coupling of small systems with only few languages into a large system with as many as 31 languages.

Excellent audio quality

The result of this advanced digital technology is excellent audio performance with no loss in signal quality or level during transmission. Each unit receives a consistently high quality audio signal. This significantly enhances the intelligibility of speech. DCN Next Generation virtually eliminates the problems usually associated with conventional systems, such as background noise, interference, distortion, and cross talk.

Reduced installation costs

Fast, cost-saving installation is an important benefit of DCN Next Generation digital technology. Thin, flexible, twin-coaxial cable and twin-optical fiber carry all the system's digital signals. This eliminates the need for the costly and vulnerable multi-core cables used in conventional analogue installations. The twin-coaxial cable and twin-optical fiber can easily be run through existing ducting and cable conduits. These can simultaneously carry up to 32 high-quality contribution channels and 32 high-quality distribution channels.

Simplified wiring

Gone are the days of complex wiring through bulky trunking. The cables used for DCN Next Generation signal transmission are a sturdy twin-coax cable moulded with a 6-pole connector and a twin-fiber terminated with easily mounted connectors.

Both cables are used to transport signals to units throughout the system and can be tapped at any desired point to connect extra equipment, thus providing a branched-tree topology. Future extensions to the system capacity, such as adding extra units or increasing the number of language channels, will not require alterations to the existing system cabling. Power is also supplied to all units via two wires in the same cable, a major advantage.

Installation is further simplified and speeded up by the use of splitters and ready-made cables with sturdy connectors, allowing easy insertion of equipment at any point in the system cabling. These easy-to-connect accessories are used for both fixed and portable installations, making DCN Next Generation a versatile system that can be installed quickly and efficiently in any situation or environment.

Simultaneous interpretation and language distribution

The DCN Next Generation system offers comprehensive facilities for simultaneous interpretation and distribution of interpretations to conference participants, meeting the stringent demands of international, multi-lingual conferences and congresses.

The system enables direct or auto-relay interpretation modes for less well-known languages. Each interpreter desk has an output for the normal (primary) language and another for alternative languages.

Up to 31 different languages

The DCN Next Generation interpreter desk can accommodate up to 31 different language channels, plus the original floor language, all with an audio-bandwidth of 20 kHz.

A maximum of six desks can be installed per interpreter booth. It can be used stand-alone or as part of a comprehensive system. When used stand-alone, the built-in microprocessor is manually programmed to allocate language channels, channel routing, and interlocks. In operator-controlled systems, the desk is used in combination with DCN Next Generation dedicated software (the Simultaneous Interpretation module LBB 4172) to form a completely integrated interpretation network.

Wired or wireless language distribution

DCN Next Generation offers a choice of language distribution systems. Language distribution can be carried out using the DCN Next Generation system cabling, with languages accessed and selected by means of channel selector units.

There is also the Integrus wireless, infra-red system that distributes languages throughout the conference venue using infra-red transmitters and radiators. Access is by means of personal infra-red receivers with headphones. Integrus can be easily connected to the DCN Next Generation Interpretation System to distribute all 32 languages with unique Bosch IR-Digital technology. This technology also conforms to IEC 61603, Part 7. Bosch IR Digital technology ensures maximum sound quality with a signal-to-noise ratio of 80dB. The Integrus system also incorporates a special operation mode to couple rooms. This means that multiple systems, located in other rooms, can provide exactly the same languages.

For more information about Integrus see the Integrus Data brochure.

Central control equipment

The Central Control Unit (CCU) forms the heart of the Congress Management System. The CCU can operate stand-alone to provide automatic control, or accessed by an operator via a PC when more extensive management is required.

Each CCU can control up to 6 x 31 interpreter units and an unlimited number of language channel selectors.

Fully-automatic Interpretation Proceedings

The CCU does not require operator control and automatically manages proceedings. This allows effective, unsupervised control of even very large, international conferences.

Operator control via a PC

The CCU allows operator control via a PC. The user can access the DCN Next Generation software modules, each with their specific control and monitoring functions. In the event of PC failure, the CCU reverts to a default operation enabling proceedings to continue without interruption.

2. Interpretation and Language Distribution

2.1 LBB 4120/00 Interpreter Desk for 32 channels

The LBB 4120 is a single-user interpreter desk with a stylish and modern design, which fully conforms to internationally agreed standards. Clear positioning per functional area of the desk controls allows intuitive operation without mistakes.

Features and benefits

- Accommodates up to 31 interpretation channels and the original floor language with an audio bandwidth of 20 kHz
- A graphic LCD with backlighting for bright information display under low light level conditions
- 5 Pre-select keys for relay languages with actvation indication at the display
- Microphone push button with a red or green illuminated ring. Red indicates an activated microphone and green indicates the booth is not in use
- A & B output channel with status and selection indication at the display
- All channels have channel number, language names and quality level indicated at the display
- Ergonomic design and features for visually handicapped such as pimple at the middle button and beeps to indicate microphone on / off and double relay selected
- Built-in loudspeaker with language channel selector
- Speech timer to indicate elapsed time of interpretation
- Automatic feedback prevention when listening to own interpretation
- Speak slowly facility to alert the current speaker to slow down
- Help request to an operator or usher
- Booth telephone and intercom indicator
- Compliant to IEC60914
- A maximum of six desks can be installed in per booth
- Table top and flush mountable
- Pluggable microphone (LBB 4149)
- Automatic headset selection when headset connected
- Easy programming via menus on the display after entering the programming mode

Controls and indicators speaking section:

- Microphone key with surrounding red "on-air" indicator and green for "booth not in use"
- Mute key
- Help key
- Slow (speak slowly) key
- Operator and chairman intercom call keys (for future use)
- Message key with yellow LED indicator (for future use)
- Telephone and Intercom call yellow LED indicators
- A and B channel engaged yellow LED indicators
- Rotary step control for channel settings (and other functions) Pressing this button sets the selection to the first available channel
- LCD with backlighting showing selected and activated output channel with channel numbers and abbreviated language names

Controls and indicators listening section

- Loudspeaker rotary volume control
- Headphone rotary volume control
- Headphone rotary bass and treble tone controls
- Beep on/off key
- 5 Relay language pre-select keys
- Floor/auto-relay key with green LED indicators
- Rotary step control (same as for speaking section) to select the relay languages for the relay pre-select keys and the loudspeaker channel. Pressing this button sets the selection to the first available channel
- LCD with backlighting, showing selected relay language with channel numbers, abbreviated names and quality indicators. Also the selected loudspeaker channel with abbreviated name is shown

Interconnection

- 6-pole microphone socket
- Headphone or headset connector (5-pole 180° Din type socket wired according to IEC 574-3)
- 6.3 mm (0.25 in) and 3.5 mm (0.14 in) stereo jack headphone connectors
- 2 m (6 ft 6 in) DCN cable with moulded 6-pole circular connector
- 6-pole circular socket for loop-through connection to the DCN network
- 8-pole modular jack connector for connection to booth telephone, intercom and booth on-air sign

Electrical characteristics

Supply voltage	17- 40 V d.c. via DCN network cable
Power consumption	3.5 W

Performance

Headphone connection

Frequency response	30 Hz – 20 kHz
Load impedance	> 32 ohm
Output power	60 mW/32 ohm

Headset connection

Frequency response	30 Hz – 20 kHz
Load impedance	> 32 ohm
Output power	60 mW/32 ohm
Nominal microphone input level	7 mVrms
Overload microphone input level	>124 mVrms

Physical characteristics

Mounting	Free-standing or mounted on a table
Dimensions (H x W x D)	82 x 330 x 170 mm (3.2 x 13 x 6.7 in) (with microphone)
Slope	25 degrees
Weight	1.3 kg (2.87 lbs)
Color top	Silver (RAL 9022)
Color base	Light Grey (RAL 000 7500)

2.2 Suitcase for LBB 4120/00 + Accessories (Audipack type 14781)

The suitcase for the LBB 4120/00 Interpreter Desk can accomodate 2 desks, 2 LBB 4149/00 microphones and accesories such as headsets, headphones and tabletop reading-lights.

Features and benefits

- **Rugged construction with reinforced corners**
- **Simplifies packing and unpacking**
- **Easy to carry and store**

Physical characteristics

Dimensions (H x W x D)	235 x 530 x 385 mm (9.3 x 20.9 x 15.2 in)
Weight	6 kg (13 lbs) (empty)
Color	Dark grey

2.3 Suitcase for LBB 4120/00 without Accessories (Audipack type 14793)

Physical characteristics

Dimensions (H x W x D)	210 x 530 x 385 mm (8.3 x 20.9 x 15.2 in)
Weight	5,5 kg (12.1 lbs) (empty)
Color	Dark grey

2.4 LBB 4149/90 LBB 4149/95 Pluggable microphones

The LBB 4149/90 and LBB 4149/95 are unidirectional electret microphones with an adjustable stem for use with LBB 4120 interpreter desk.

Product Variants:
• LBB 4149/90: short stem
• LBB 4149/95: long stem

Features and benefits

• Unidirectional electret microphone
• Adjustable stem
• Combines high acoustic quality and good sensitivity with low sensitivity for undesired sounds caused by touching and ticking on the table or unit surface.
• Built-in plop and windshield
• Slim and attractive design
• Fast and reliable connection is assured via the 6-pole connector.

Controls and indicators

• Red light emitting light ring around the microphone head

Interconnection

• 6-pole connector

Performance

Sensitivity	nominal level at 85 dB SPL, max level 110 db SPL at < 3% THD
Frequency response	100 Hz – 16 kHz
Transducer type	electret
Directional pattern	cardiod
Equivalent noise level	24 dB (A)
SNR	60 dB

Physical characteristics

Stem length	LBB 4149/90	310 mm (12.2 in)
	LBB 4149/95	480 mm (18.9 in)
Weight	LBB 4149/90	110 g (0.24 lb)
	LBB 4149/95	125 g (0.28 lb)
Mounting	6-pole connector	

2.5 LBB 4124/00 Channel Selector Panel for 32 Channels

The LBB 4124/00 is a compact and stylish single-user audio channel selector for listening by headphone to up to 32 high quality audio channels used for distribution of interpretation and floor channels.

Controls and indicators

• No audio output until the headphone is connected.
• Automatically adapts to available channels
• Stylish and modern design
• Built-in "Silent" function; no audio output until one of the keys has been pressed to eliminate audible noise from the headphones when not in use.
• Upon insertion of a headphone the default "floor" channel (channel 0) is selected with a comfortable headphone volume and the dimmed backlighting is activated.
• Flush mountable in table-tops, on top or at the front, or in arm rests of seats.

Controls and indicators

- Two push-buttons (up/down) for channel selection
- Two push-buttons (up/down) for headphone volume control
- Backlit 2-digit LCD for channel number indication

Interconnection

- 3.5 (0.14 in) mm stereo jack headphone connector
- Connector for external headphone
- 2 m (6 ft 6 in) cable with a moulded 6-pole circular connector
- 6-pole circular connector for loop-through interconnection

Electrical characteristics

Supply voltage	17- 40 V d.c. via DCN network cable
Power consumption	0.8 W

Performance

Headphone	
Load impedance	> 32 ohm < 1 kΩ

Physical characteristics

Mounting	Flush mounted
Dimensions (H x W x D)	40 x 100 x 100 mm (1.6 x 3.9 x 3.9 in)
Weight	0.3 kg (0.66 lb)
Color	Silver (RAL 9022)

2.6 LBB 4125 Set of 50 end caps

Matching end caps to give a finishing touch to the flush mounted channel selector. 2 end caps are needed per flush mount channel selector.
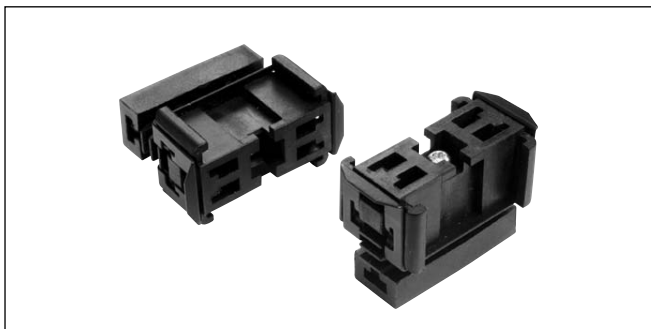
Physical characteristics

Color	Silver (RAL 9022)

2.7 LBB 4127 Set of 50 couple pieces

The couple pieces are to flush mount and connect the channel selector and the ends caps. 2 couple pieces are needed per flush mount channel selector .

Physical characteristics

Color	Black

3. Headphones

A range of headphones is available for use with the DCN Next Generation Interpretation System. This range includes Interpreter Headphones (LBB 9095/30) , Lightweight Stereo Headphones (LBB 3443/00), Stethoscopic Headphones (LBB 3441/10), Single Earphones (LBB 3442/00) and High-Quality Dynamic Headphones (LBB 3015/04).

3.1 LBB 9095/30 Interpreter Headphones

Lightweight, dynamic headphones with 1.5 m (59.05 in) cable terminated with a 6.3 mm (0.25 in) jack plug, for direct connection to Interpreters Desk LBB 4120/00.

Technical data	
Impedance	2 x 720 Ω
Frequency response	250 Hz to 13 kHz (-10 dB)
Power handling capacity	200 mW
Sensitivity (1 kHz)	97 dB SPL/earpiece at
	0 dBV/system 96 dB SPL/earpiece
	at 1 mW/earpiece
Weight	78 g (0.17 lb)
Color	Black/grey

Set of 25 pairs of replacement earpads for headphones LBB 9095/30.

3.2 LBB 3443/00 Lightweight Stereo Headphones

Physical and electrical characteristics:	
Connection	1.3 m (4 ft) cable with 3.5 mm (0.14 in) angled jack plug
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
Weight	70 g (0.16 lb)
Finish	Charcoal with silver

Set of 100 pairs of replacement ear pads: LBB 3443/50

3.3 LBB 3441/10 Under -The- Chin Stereo Headphones

Physical and electrical characteristics:

Connection	1.2 m (4 ft) cable with 3.5 mm (0.14 in) angled jack plug
Impedance	150 ohm per earpiece
Audio frequency response	50 Hz to 5 kHz (-10 dB)
Power handling capacity	60 mW
Sensitivity (1 kHz)	107 dB SPL/earpiece at 1 mW/earpiece
Weight	33 g (0.07 lb)
Finish	Black

Set of 1.000 replacement ear tips: LBB 3441/50

3.4 LBB 3442/00 Single Earphone

Physical and electrical characteristics:

Connection	1.2 m (4 ft) cable with 3.5 mm (0.14 in) jack plug
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
Weight	25 g (0.06 lb)
Finish	Dark grey

3.5 LBB 3015/04 High Quality Dynamic Stereo Headphones

Physical and electrical characteristics:

Connection	1.2 m (4 ft) cable with 3.5 mm (0.14 in) jack plug
Impedance	720 ohm per earpiece
Audio frequency response	250 Hz to 13 kHz (-10 dB)
Power handling capacity	200 mW
Sensitivity (1 kHz)	96 dB SPL/earpiece at 1 mW/earpiece
Weight	90 g (0.20 lb)
Finish	Black/grey

Set of 25 pairs of replacement ear pads: LBB 9095/50

4. Central Control Equipment

4.1 LBB 4100/00 Central Control Unit

The Central Control Unit (CCU) is the heart of the interpretation system with as many as 2 x 32 high quality audio channels; allowing for interpretation application with floor and 31-interpretation languages.

Features and benefits

- Award winning design
- Control for up to 186 interpreter desks
- Control facilities for an unlimited number of 32-channel selectors LBB 4124
- Optical network for coupling of the CCU to Audio Expanders LBB 4402 to allow a variety of audio contribution and distribution facilities
- The optical network is designed for redundant cabling. The optical network can be either single branch or redundant loop
- 2 audio line inputs and 2 audio line outputs
- Adjustable sensitivity for the audio inputs
- Adjustable level for the audio outputs
- Configuration of CCU and system via a display and one single rotary push button
- Each CCU can be assigned a unique name by the installer for easy identification
- VU meter readings to monitor audio inputs and audio outputs. The audio can be monitored using a headphone
- 19" (2U) housing for table top or rack mounting
- Handgrips for easy transportation
- 19" rack mounting brackets, detachable feets and mounting accessories included

Controls and indicators

- Mains on/off switch at the front
- 2 x 16 Character LCD display at the front for status information and CCU configuration
- Rotary control at the front to navigate through the LCD menus
- Two red LED overload indicators for the DCN network outputs at the rear
- Two red LED overload indicators for the optical connections at the rear

Interconnection

- Euro mains socket with built-in fuse, matching mains cable (1.7 m [5.58 ft]) included
- Two DCN outlet sockets for connection of units, plus extension power supplies. Each socket is protected against short-circuit (2 x 6-pole circular sockets)
- Two optical network connections for connection of Audio Expanders
- Two 3-pole XLR balanced audio line inputs with optional galvanic separation.
- Two stereo Cinch unbalanced audio line inputs
- Two 3-pole XLR balanced audio line output with optional galvanic separation.
- Two stereo Cinch unbalanced audio line outputs
- 1 x headphone output 3.5 mm (0.14 in) stereo
- Two RS-232 serial data connectors for PC connection and diagnostic equipment

Electrical characteristics

Supply voltage	115/230 V ± 10 %
Power consumption	200 W
DCN system supply	40 VDC, max 65 W per DCN socket
Optical network supply	40 VDC, max 65 W
Total supply power	130 W
RS-232 connection	2 x 9-pole Sub-D female socket

Performance

Frequency response	30Hz – 20 kHz (-3dB at nominal level)
THD at nominal level	< 0.5 %
Cross talk attenuation	> 85 dB at 1 kHz
Dynamic range	> 90 dB
Signal–to-noise ratio	> 87 dBA

Audio inputs/outputs:	
XLR nominal input	- 12 dBV (±6 dB)
XLR maximum input	+12 dBV
Cinch nominal input	-24 dBV (± 6 dB)
Cinch maximum input	+0 dBV
XLR nominal output	- 12 dBV (+6/- 24 dB)
XLR maximum output	+12 dBV
Cinch nominal output	-24 dBV (+6/- 24 dB)
Cinch maximum output	+0 dBV

Physical characteristics	
Mounting	Free-standing or mounted in a 19"-rack
Dimensions (H x W x D)	88 x 483 x 350 mm
	(3.5 x 19 x 13.8 in)
	(with brackets, without feet)
	92 x 440 x 350 mm
	(3.6 x 17.3 x 13.8 in)
	(without brackets, with feet)
Weight	7 kg (17 lbs)
Color	Charcoal with silver

4.2 LBB 4106/00 Extension Power Supply Unit

The Extension Power Supply unit is used in combination with a CCU to supply extra power to the DCN network.

Features and benefits

- Easy to connect to DCN
- Maximum supply power of 255 W
- Installable at any convenient point in the system cabling due to its built-in DCN network splitter
- Using loop-through cabling
- Switches on automatically when the CCU is switched on
- All outputs are protected against short circuit
- Freestanding on a tabletop or mounted in a 19" rack

Controls and indicators

- "Power on" LED indicator
- Three indicators to indicate DCN outlet overload (red LEDs)

Interconnection

- Euro-mains socket with built-in fuse holder, mains cable 1.7 m (5 ft 6 in) included
- 2 m (6 ft 6 in) DCN cable with moulded 6-pole circular connector
- 6-pole circular socket for loop-through connection to the DCN network
- Three DCN outlet sockets for connection of units, plus extension power supplies. Each socket is protected against short-circuit (3 x 6-pole circular sockets)

Electrical characteristics	
Supply voltage	105, 115, 125, 220, 230, 240 Va.c., 50/60 H z (230 V on delivery)
Power consumption	350 W
DCN system supply	40 VDC, max 85W per DCN socket

Physical characteristics	
Mounting	Free-standing on a table-top or mounted in a 19" rack unit (requires 2U, _19" width)
Dimensions (H x W x D)	100 x 220 x 308 mm
	(3.9 x 8.7 x 12.1 in)
Weight	8.3 kg (18.3 lbs)
Color cabinet	Light gray (PH 10709)
Color handles	Dark gray (PH 10711)

4.3 LBB 4402/00 Audio Expander

The audio expander can contribute audio to and distribute audio from the system. Typical applications are room coupling and audio distribution.

Features and benefits

- Award winning design
- Room coupling facility
- Versatile audio distribution facility
- Optical network for coupling to the CCU
- Designed for redundant network cabling. The network can be either single branch or redundant loop
- Four audio line inputs (of which 2 can be configured as microphone input) for floor and interpretation channels
- Four audio line outputs for floor and interpretation channels
- Flexible routing of floor and interpretation channels
- Adjustable sensitivity for the audio inputs
- Adjustable level for the audio outputs
- Configuration of the Audio Expander via a display and one single rotary push button
- Each Audio Expander can be assigned a unique name by the installer for easy identification
- VU meter readings to monitor audio inputs and audio outputs. The audio can be monitored using a headphone
- 19" (2U) housing for table top or rack mounting
- Handgrips for easy transportation
- 19" rack mounting brackets, detachable feets and mounting accessories included
- The unit is powered from the network

Controls and indicators

- 2 x 16 Character LCD display for status display and configuration of the Audio Expander
- Rotary control at the front to navigate through the LCD menus

Interconnection

- Two optical network connections for connecting to the CCU
- Four 3-pole XLR balanced audio line inputs with galvanic separation
- Four stereo Cinch unbalanced audio line inputs
- Four 3-pole XLR balanced audio line output with galvanic separation
- Four stereo Cinch unbalanced audio line outputs
- 8 x control inputs to enable audio inputs and audio outputs

- 5 x control outputs to indicate channel engaged state
- 1 x headphone output 3.5 mm (0.14 in) stereo

Electrical characteristics

Supply voltage	24 – 48 Vdc
Power consumption	5.6 W

Performance

Frequency response	30 Hz – 20 kHz (-3dB at nominal level)
THD at nominal level	< 0.5 %
Cross talk attenuation	> 85 dB at 1 kHz
Dynamic range	> 90 dB
Signal–to-noise ratio	> 87 dBA

Audio inputs/outputs

Line Input

XLR nominal input	- 12 dBV (± 6 dB)
XLR maximum input	+ 12 dBV
Cinch nominal input	-24 dBV (± 6 dB)
Cinch maximum input	+ 0 dBV

Microphone Input

Nominal input	-57 dBV (± 6 dB)
Maximum input	-51 dBV
Phantom supply	12 V ± 1 V @ 15 mA

Line Output

XLR nominal output	- 12 dBV (+ 6/- 24 dB)
XLR maximum output	+ 12 dBV
Cinch nominal output	-24 dBV (+ 6/- 24 dB)
Cinch maximum output	+ 0 dBV

Physical characteristics

Mounting	Free-standing or mounted in a 19"-rack
Dimensions (H x W x D)	88 x 483 x 350 mm (3.5 x 19 x 13.8 in) (with brackets, without feet)
	92 x 440 x 350 mm (3.6 x 17.3 x 13.8 in) (without brackets, with feet)
Weight	6 kg (13 lbs)
Color	Charcoal with silver

5. Application Software

5.1 LBB 4190/00 DCN NG Startup Software

The Startup screen is active whenever DCN NG software modules are used for controlling and monitoring. This module is different from all other DCN NG software modules because it is primarily used as a platform from which the other modules are selected.

However, this is only one aspect of Startup. The following can also be carried out:

Features and benefits

• Setting master volume levels

• Opening, closing and deleting Installation File

• Configuring the Startup program to automatically load selected DCN modules

• Accessing, acknowledging and printing error messages

• On-screen help facility

When Startup is loaded, it presents the user with a desktop window that is the DCN NG opening screen. The other DCN NG modules are represented by icons in this opening screen, and can be activated simply by clicking on them. Startup also has a facility which allows other DCN NG modules to be loaded automatically.

This saves having to manually select modules that are used virtually every time the DCN NG system is in operation. The user can specify any combination of modules for automatic Startup.

5.2 LBB 4185/00 DCN NG System Installation

The System Installation software is a powerful and effective tool for installers and system operators when installing and setting up the DCN NG system. System installation, set-up and functions are brought entirely under PC control through its easy-to-use, Windows-based software.

Features and benefits

• Single-point control of system installation

• Facilities for assigning functions to audio channels

• In-conference warning message when installation configuration changes

• On-screen help facility

The DCN NG System Installation software provides – in an easy yet methodical way – to specify the number of audio channels dedicated to interpretation and intercom facilities.
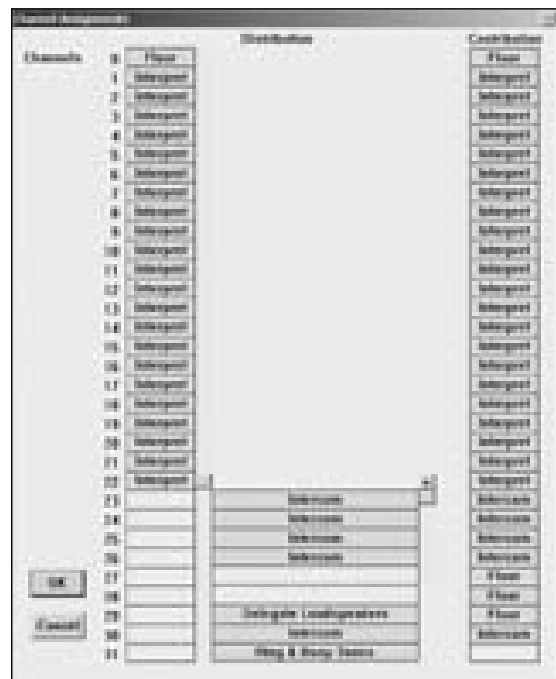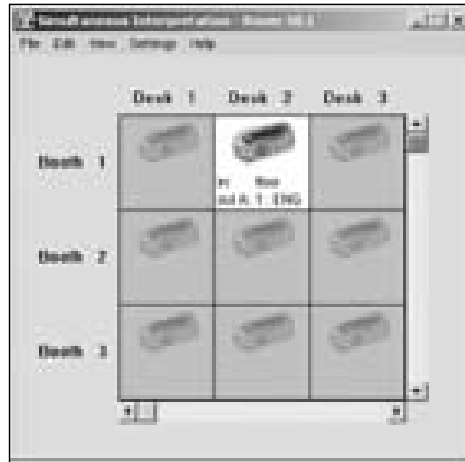
5.3 LBB 4172/00 DCN NG Simultaneous Interpretation

Simultaneous interpretation is an essential component in the international congress venues of today. The Simultaneous Interpretation program supports the preparation of simultaneous interpretation facilities and the monitoring of interpreter activities during a conference. It can accommodate 31 interpreter booths, each with up to 6 interpreter desks.

Features and benefits

- Can accommodate 186 interpreter desks
- Online monitoring of interpretation activities
- Facilitates normal and relay interpretations
- Microphone mode options
- Specifying a language for each of the system interpretation channels
- Determining the microphone interlock mode
- Online monitoring of interpreter activities during a conference
- Onscreen help facility

The main window has two display modes, both rich in graphics for easy assimilation of information. One gives a channel-oriented overview of system status, such as which language is present on that channel, the mnemonic for that language, on which language the interpretation is based, and the number of the desk and booth generating that language. The other display mode gives the same information in a different form, providing an overview of the status of each desk in each booth. This includes booth and desk status (active or non-active), and the language in and out of each active desk.

In addition, the software enables the operator to establish microphone interlocks, between booths and within booths, with or without using an override facility. In interlock mode, the active microphone must first be turned off before any other microphones can become active. In override mode, any microphone can automatically override the current active microphone and become active.

The interpreter system settings are stored in an interpreter configuration file. There are a number of options available to the user for working with these files, all of which are standard DCN NG file options. These consist of opening, creating and saving files under a new name. A print function enables a hard copy printout of desk and channel language assignment – ideal for use as a reference to current system settings.

6. DCN Network

6.1 LBB 4114/00 Trunk Cable Splitter

The LBB 4114/00 is used in conjunction with the system installation cabling to divide the trunk-line cabling, thus allowing system installers to achieve the optimum layout of the trunk-line, and therefore contribution equipment, to suit the conference venue. The trunk-cable splitter comes complete with cable restraining clamps and includes mounting holes for fixing to a floor or wall.

Interconnection

- 2 m (6 ft 6 in) long cable terminated with a moulded 6-pole circular connector
- 6-pole circular connector for loop-through connections
- 2 x 6-pole circular connector for trunk cable splitting and pulse regeneration purposes

Physical characteristics

Mounting	Floor, cable duct or wall mounting
Dimensions (H x W x D)	35 x 49 x 140 mm (1.4 x 1.9 x 5.5 in)
Weight	0.3 kg (0.66 lb)
Color	Charcoal (PH 10736)

Electrical characteristics

Supply voltage	17- 40 V d.c. via DCN system cable
Power consumption	1.3 W

6.2 LBB 4115/00 Tap-Off Unit

• **Short-circuit proof tap-off points at the system cable**

The LBB 4115/00 is used to create short-circuit proof tap-off points on the trunk line cabling. Each tap-off point allows for connection of up to four channel selector panels or up to two tabletop contribution units such as delegate-, chairman- or interpreter desks. A Tap-Off Unit consists of two tap-off points. The Tap-Off Unit comes complete with cable restraining clamps and includes mounting holes for fixing purposes.

Interconnection

- 2 m (6 ft 6 in) long cable terminated with a moulded 6-pole circular connector
- 6-pole circular connector for loop-through connections
- 2 x 6-pole circular connector for trunk cable splitting and pulse regeneration purposes

Electrical characteristics

Supply voltage	17- 40 V d.c. via DCN system cable
Power consumption	1.4 W
Max power at Tap-offs	3.5 W each

Physical characteristics

Mounting	Floor, cable duct or wall mounting
Dimensions (H x W x D)	35 x 49 x 140 mm (1.4 x 1.9 x 5.5 in)
Weight	0.3 kg (0.66 lb)
Color	Charcoal (PH 10736)

6.3 LBB 4116/xx Extension Cable Assembly

Cable terminated at both ends with a moulded 6-pole circular connector (male and female). The extension to the type number gives the length of the cable.

Technical data

Grey PVC sheath	6 mm (0.24 in) dia.

Ordering information

LBB 4116/02	2 m (6.6 ft) length
LBB 4116/05	5 m (16.0 ft) length
LBB 4116/10	10 m (33.0 ft) length
LBB 4116/15	15 m (49.2 ft) length
LBB 4116/20	20 m (66.0 ft) length
LBB 4116/25	25 m (82.0 ft) length

6.3.1 LBB 4116/00 100 m Installation Cable

100 m (328 ft) roll of cable identical to LBB 4116/xx but without connectors.

6.4 LBB 4117/00 Set of 25 Cable Locking Clamps

Matching clamps for male/female cable connectors such as those on the Extension Cable LBB 4116/xx. One clamp per male/female connector required.

6.5 LBB 4118/00 Termination plug for DCN cable

The LBB 4118/00 termination plug is specially designed for use with opened-ended DCN cabling.

7. Optical Network

7.1 LBB 4410/00 Optical Network splitter

The optical network splitter is used in conjunction with the system installation to-tap off two branches from the optical network cable run.

Features and benefits

- Redundant network connection
- Power on indicator
- Error indication
- Powered externally (48 V DC) or from the CCU
- External power is not fed into the main cable run
- Automatically powered from the external power supply
- Maximum power feed to tap-off outlets can be reduced
- Repeater function to extend the cable length with 50 meter (164 ft)

Controls and indicators

- 2 LEDs for diagnostics
- Jumpers to select maximum power fed to the tap offs

Interconnection

- 2 optical network connection for main run
- 2 optical network connection for tap off
- External power supply connector

Electrical characteristics

Power consumption	3.9 W (dc)

Physical characteristics

Mounting	By 2 screws in bracket
Dimensions (H x W x D)	200 x 82.5 x 28.9 mm
	(7.8 x 3.2 x 1.1 in)
	(with and without bracket)
Weight	0.3 kg (0.66 lb)
Color	Charcoal grey

7.2 LBB 4414/00 Fiber interface

The fiber interface is used in conjunction with the system installation to convert from plastic optical network cable to glass optical fiber and vice versa.

Features and Benefits

- Redundant network connection
- Power on indicator
- Error indication
- Powered externally (48 V DC) or from the CCU
- Automatically powered from the external power supply

Controls and indicators

- 2 LEDs for diagnostics
- 2 control inputs (for future use)

Interconnection

- 1 optical network connection for plastic optical fiber
- 1 optical network connection for glass optical fiber
- External power supply connector

Electrical characteristics

Power consumption	4.6 W (dc)

Physical characteristics

Mounting	By 2 screws in bracket
Dimensions (H x W x D)	200 x 82.5 x 28.9 mm
	(7.8 x 3.2 x 1.1 in)
	(with and without bracket)
Weight	0.3 kg (0.66 lb)
Color	Charcoal grey

7.3 LBB 4416/xx Optical Network cables

This is a special cable with 2 plastic fibers for data and audio communication and 2 copper cores for the power supply.
The cable is supplied with the network connectors fitted. This cable can be used to connect the CCU to audio expanders.

Technical data

Black PVC cable	**7 mm** (0.24 in) dia.

The network cables are supplied in different lengths. The extension of the type number indicates the length of the cable. Only the LBB 4416/00 is without connectors. The connectors are available separately (LBB 4417/00).

Ordering information:

LBB 4416/01	Network cable assembly 0.5 m (1.6 ft)
LBB 4416/02	Network cable assembly 2 m (6.6 ft)
LBB 4416/05	Network cable assembly 5 m (16 ft)
LBB 4416/10	Network cable assembly 10 m (33 ft)
LBB 4416/20	Network cable assembly 20 m (66 ft)
LBB 4416/50	Network cable assembly 50 m (164 ft)

7.4 LBB 4417/00 Set optical network connectors

The set network connectors contains 20 connectors that can be used with the network cable LBB 4416/00.
For assembly the cable/connector toolkit LBB 4418/00 is required.

7.5 LBB 4418/00 Optical Cable/connector tool kit

The tool kit contains the following items:
• Standard cutting pliers
• Stripping pliers
• Crimping pliers
• POF cutting/stripping tool
• POF positioning and indent tool
• Torx screw driver
• Spare cutting system

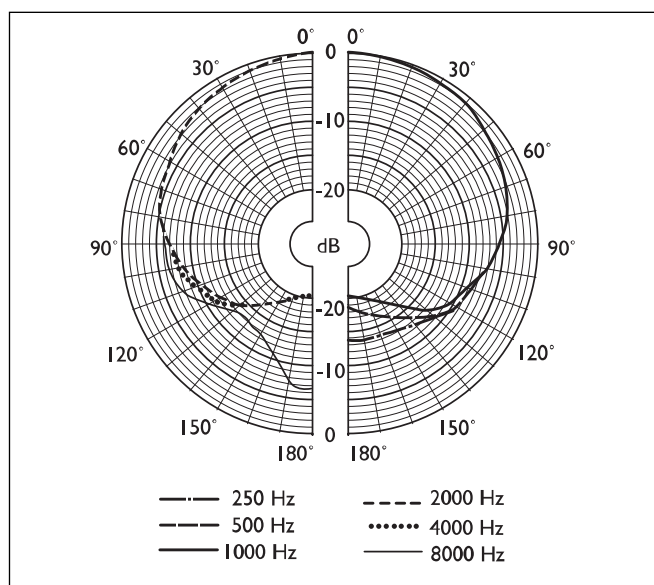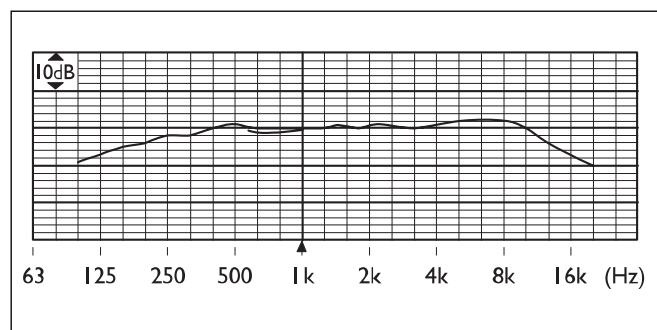### 7.6 LBB 4416/00 Optical Installation Cable

Network cable 100 m (328 ft)

7.7 LBB 4419/00 Set Optical cable couplers (10 pieces)

Cable couplers are used to couple LBB 4416/xx network cable assemblies for extension.

8. Technical Data

Conforms to the international standard IEC 60914, the international standard for conference systems.

8.1 Microphones

General	
Frequency response	100 Hz to 16 kHz
Transducer type	condenser
Directional pattern	cardioid
Max. SPL for THD <3%	110 dB
Equivalent input noise level	24 dB (A)

8.2 Headphones

8.2.1 Dynamic Headphones LBB 3015/04 and LBB 9095/30

Impedance	2 x 720 Ω
Frequency response	250 Hz to 13 kHz (-10 dB)
Connection	1.2 m (3.93 ft) cable LBB 9095/30 with 6.3 mm (0.25 in) and LBB 3015/04 with 3.5 mm (0.14) jack plug
Power handling capacity	200 mW
Sensitivity (1 kHz)	96 dB SPL/earpiece at 1 mW/earpiece
Weight	90 g (0.19 lb)
Color	Black/grey

8.2.2 Lightweight stereo headphones LBB 3443/00

Impedance	2 x 32 Ω
Frequency response	50 Hz to 20 kHz (-10 dB)
Connection	1.3 m (4.27 ft) cable with 3.5 mm (0.14 in) jack plug
Power handling capacity	50 mW
Sensitivity (1 kHz)	98 dB SPL/earpiece at 1 mW/earpiece
Weight	70 g (0.16 lb)
Color	Charcoal with silver

8.2.3 Under The Chin Stereo Headphones LBB 3441/10

Impedance	2 x 150 Ω
Frequency response	50 Hz to 5 kHz (-10 dB)
Connection	1.2 m (3.93 ft) cable with 3.5 mm (0.14 in) jack plug
Power handling capacity	60 mW
Sensitivity (1 kHz)	107 dB SPL/earpiece at 1 mW/earpiece
Weight	33 g (0.07 lb)
Color	Black

8.2.4 Single Earphone LBB 3442/00

Impedance	32 Ω
Frequency response	100 Hz to 5 kHz (-10 dB)
Connection	1.2 m (3.93 ft) cable with 3.5 mm (0.14 in) jack plug
Power handling capacity	5 mW
Sensitivity (1 kHz)	114 dB SPL/earpiece at 1 mW/ear piece
Weight	25 g (0.06 lb)
Colour	Dark grey

8.3 Transmission links

- **From interpreter microphone to delegate headphone**
- **From interpreter microphone to interpreter headphone**
- **From auxiliary input to delegate headphone**
- **From auxiliary input to interpreter headphone**
- **From interpreter microphone to auxiliary output**

General

Frequency response	125 Hz to 14 kHz *
Harmonic distortion	<0.5%
Harmonic distortion at overload	<1%
Crosstalk attenuation at 4 kHz	>80 dB
Dynamic range	>90 dB

8.4 Combined units

- **Interpreter microphone with transmission link to interpreter headphone**
- **Interpreter microphone with transmission link to delegate headphone**
- **Interpreter microphone with transmission link to auxiliary output**

General

Typical frequency response	125 Hz (-8 dB) to 14 kHz (-8 dB)
Front-to-random sensitivity index	>4.6 dB
Rated equivalent sound pressure level due to inherent noise	<25 dB (A)
Total harmonic distortion at overload	<1%
Crosstalk attenuation	>80 dB

8.5 System electrical and electro-acoustic characteristics

General

Nominal input level	85 dB SPL
Overload input level	110 dB SPL
Automatic gain reduction at	30 dB (interpretation channels, 18 dB)
Overload input level	(delegate loudspeaker channel) (not for PA-floor output)
Operator master gain control	15 x 1 dB and OFF (Mute)

8.6 System environmental conditions

General

Working conditions	Fixed/stationary/transportable
Temperature range	
- transport	-20 to +55 °C (-4 to 131 °F)
- operating	+5 to +45 °C (41 to 113 °F)
Relative humidity	95% max.
Safety	According to EN 60065, and according to CAN/CSA-E65-94 (C and US) and UL 6500-96 for LBB 4100/xxD, LBB 4106/00D
EMC emission	According to harmonized standard EN 55013 (1988) and FCC Rules (Part 15) complying with the limits for a class A digital device
EMC immunity	According to harmonized standard EN 55020 (1987)
EMC approvals	Affixed with the CE mark. EC directive 89/336 EEC
ESD	According to IEC 801-2; contact 4 kV, air 8 kV. Fast transients to the mains and data lines according to IEC 801-4
Additional immunity tests	According to IEC 801-3. Field strength 3 V/m in the frequency range 80 - 1000 MHz. Severity level 3: not affecting normal operation
Mains harmonics	Prepared to EN 60555-2 Class A
Other legal requirements	No cadmium used other than in the Nickel-Cadmium battery housed in the central unit
Shock resistance	According to IEC 68.2.29 Eb
Vibration resistance	According to IEC 68.2.6 Fc, procedure A

8.7 Interface data

Recommended external microphone type (or headset microphone)

Element:	Electret-condenser
Polar pattern	Omni directional
Operating voltage	5 Vd.c.
Sensitivity	Approx. -62 dB at 1200 Ω
	(0 dB = 1 V/mbar at 1 kHz)
Frequency response	100 Hz to 14 kHz
Connector	3.5 mm (0.14 in) jack mono or stereo

8.7.1 LBB 4100/00 Central Control Unit

Electrical characteristics

Supply voltage	115/230 V ± 10 %
Power consumption	200 W
DCN system supply	40 VDC, max 65 W per DCN socket
Optical network supply	40 VDC, max 65 W
Total supply power	130 W
RS-232 connection	2 x 9-pole Sub-D female socket

Performance

Frequency response	30 Hz – 20 kHz (-3dB at nominal level)
THD at nominal level	< 0.5 %
Cross talk attenuation	> 85 dB at 1 kHz
Dynamic range	> 90 dB
Signal–to-noise ratio	> 87 dBA

Audio input

XLR maximum input	+12 dBV
Cinch maximum input	0 dBV

Audio output

XLR maximum output	+12 dBV
Cinch maximum output	0 dBV

Physical characteristics

Mounting	Free-standing or mounted in a 19"-rack
Dimensions (H x W x D)	88 x 483 x 350 mm
	(3.5 x 19.0 x 13.8 in)
	(with brackets, without feet)
	92 x 440 x 350 mm
	(3.6 x 17.3 x 13.8
	(without brackets, with feet)
Weight	7 kg (15 lbs)
Color	Charcoal with silver

8.7.2 LBB 4106/00(D) Extension Power Supply Unit

Electrical characteristics

Supply voltage	105, 115, 125, 220, 230, 240 Va.c.,
	50/60 H z (230 V on delivery)
Power consumption	350 W
DCN system supply	40 VDC, max 85W per DCN socket

Physical characteristics

Mounting	Free-standing on a table-top or
	mounted in a 19" rack unit
	(requires 2U, _19" width)
Dimensions (H x W x D)	100 x 220 x 308 mm
	(3.9 x 8.66 x 12.1 in)
Weight	8.3 kg (18.3 lbs)
Color cabinet	Light gray (PH 10709)
Color handles	Dark gray (PH 10711
Nominal power consumption	350 W
Mains voltage	105, 115, 125, 220, 230,
	240 Va.c., 50/60 Hz
	230 V on delivery (125 V for D units)

8.7.3 LBB 4402/00 Audio Expander

Electrical characteristics

Supply voltage	24 – 48 Vdc (-3 dB at nominal level)
Power consumption	5.6 W

Performance

Frequency response	30 Hz – 20 kHz
THD at nominal level	< 0.5 %
Cross talk attenuation	> 85 dB at 1 kHz
Dynamic range	> 90 dB
Signal–to-noise ratio	> 87 dBA

Audio inputs/outputs

Line Input

XLR nominal input	- 12 dBV (± 6 dB)
XLR maximum input	+12 dBV
Cinch nominal input	-24 dBV (± 6 dB)
Cinch maximum input	0 dBV

Microphone Input

Nominal input	-57 dBV (± 6 dB)
Maximum input	-51 dBV
Phantom supply	12 V ± 1 V @ 15 mA

Line Output

XLR nominal output	- 12 dBV (+ 6/- 24 dB)
XLR maximum output	+12 dBV
Cinch nominal output	-24 dBV (+ 6/- 24 dB)
Cinch maximum output	0 dBV

Physical characteristics	
Mounting	Free-standing or mounted in a 19"-rack
Dimensions (H x W x D)	88 x 483 x 350 mm
	(3.5 x 19.0 x 13.8 in)
	(with brackets, without feet)
	92 x 440 x 350 mm
	(3.6 x 17.3 x 13.8 in)
	(without brackets, with feet)
Weight	6 kg (13 lbs)
Color	Charcoal with silver

8.8 Power consumption

The Power Consumption of units connected to a CCU has a bearing on the total number of such units that can be connected.

Unit	Description	Power	Nodes
LBB 4100/00	Central Control Unit		**2**
LBB 4106/00	Extension Power SupplyUnit	**0.7**	
LBB 4112/00	Data Distribution Board	**1.4**	
LBB 4114/00	Trunk Splitter	1.3	
LBB 4115/00	Tap-Off Unit	1.4	
LBB 4120/00	Interpreter desk	**3.5**	
LBB 4124/00	Channel Selector	0.8	
LBB 4402/00	Audio Expander	5.6	
LBB 4410/00	Network Splitter	3.9	1
LBB 4414/00	Fiber Interface	4.6	1

7.9 System Limits

- The total DCN cable length (using standard LBB 4116/xx cable) between the central control unit and the last unit in any branch of the system must not exceed 250 m (820 ft 2 in). This includes all extension cables and the 2 m (78.74 in) long cable attached to each system unit
- The total number of units from the central control LBB 4100/00 unit to the first regenerative tap-off (i.e., from Trunk Cable Splitter LBB 4114/00 or Extension Power Supply Unit LBB 4106/00) must not exceed 50 pieces (100 m [328 ft 1 in])
- The total length of the extension cable between regenerative tap-offs outputs must not exceed 100 m (328 ft 1 in)
- The maximum distance between units is normally 160 cm (62.99 in). This distance can be increased by using the LBB 4116/xx Extension Cable
- The total Plastic Optical Fiber (POF) length (using standard LBB 4416/xx cable) between two units is 50 m. When more than 50 and less than 1500 meter is required, fiber interfaces LBB 4414/00 and Glass Optical Fiber (GOF) must be used. Only multimode GOF with a maximum attenuation of 2 dB/km and a wavelength of 1300 and terminated with SC connectors is supported.
  It is also possible to increase the 50 m by inserting a network splitter LBB 4410/00 every 50 m or less.
- The maximum length of all optical fibers together (POF & GOF) depends on the number of nodes in the system. The graph below shows the relation between the number of nodes and the fiber lengths.
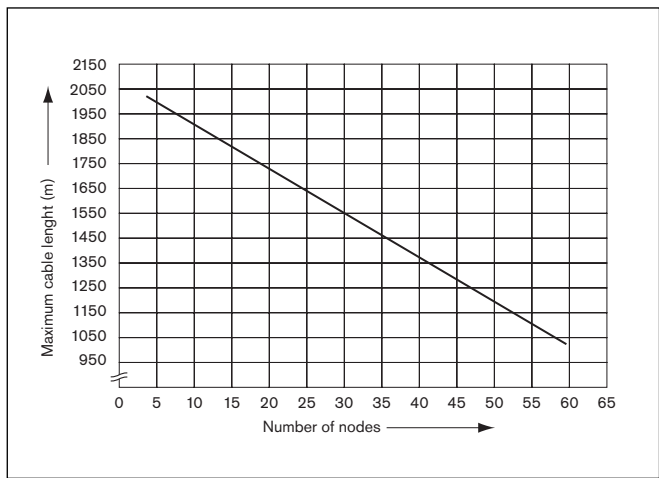
Examples

The examples given below of the LBB 4100/00, LBB 4106/00 show the following:
- Maximum number of units that can be connected to a single output
- Maximum number of units that can be connected to all outputs
- Maximum DCN cable length from an output to the last unit
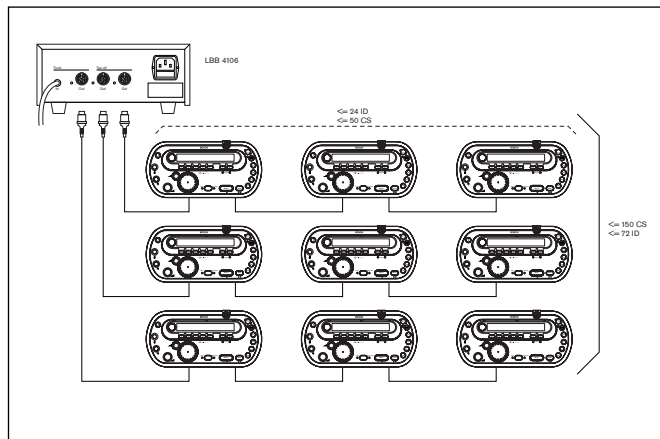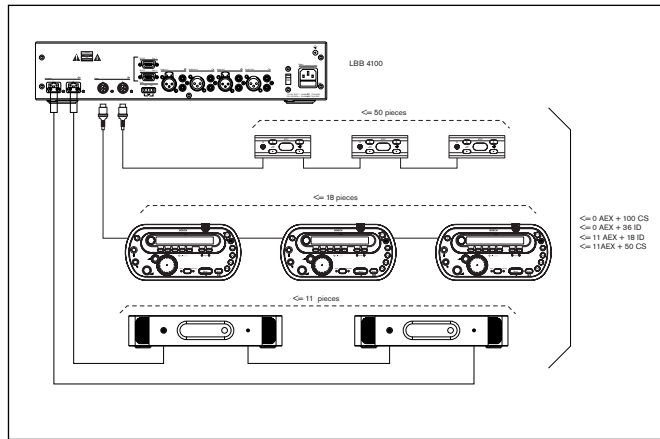
In these examples, the following annotations are used:
ID = Interpreter desks
CS = Channel selectors
AEX = Audio Expander
It can be seen by the maximum number given for each type of unit that a Channel Selector requires less power than a Interpreter desk, and therefore more Channel Selectors can be connected to central control equipment. Interpreter desks require more power than the Channel Selectors.

Tradition of quality and innovation

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