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| Integrus  Architect and Engineering Specifications |
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| **DCN_LOGOen** **Architect & Engineering Specifications** |



About this Document

Purpose

When preparing a specification, tender or quotation for a Bosch Integrus installation, 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

An Integrus system can be used as part of a DCN Next Generation system. This Architect’s and Engineer’s Specifications only contains the functional description specific for the Integrus system.

For the functional description of a DCN Next Generation system with Integrus, see the DCN Architect’s and Engineer’s Specifications.

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 congress 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 delegates where audio amplification is required

Table of contents

1 Introduction 5

2 Scope of Specification 5

3 System Summary 5

3.1 System overview 5

3.2 System Functions 5

3.3 Compliance 6

3.4 First-line maintenance 6

3.5 Transmission Characteristics 6

3.6 System Audio Performance 6

3.7 Cabling and System Limits 6

4 Transmitter and Modules 6

4.1 Transmitter 6

4.2 Audio Input and Interpreter Module 7

4.3 Flight Case 8

5 Radiators and Accessories 8

5.1 Medium and High Power Radiators 8

5.2 Wall Mounting Bracket 9

5.3 Flight Case 9

6 Receivers, Battery Packs, Charging Units and Storage Suitcases 9

6.1 Receivers 9

6.2 NiMH Battery Pack 10

6.3 Charging Units 10

6.4 Flight Case 11

7 Headphones 11

7.1 Lightweight Stereo Headphones 11

7.2 Under The Chin Headphones 11

7.3 Single Earphone 12

7.4 Induction Loop Neckband 12

7.5 High Quality Dynamic Headphones 12

8 6-Channel Interpreter Desk and Accessories 12

8.1 6-Channel Interpreter Desk 12

8.2 Interpreter Headphones 13

8.3 Extension Cables 13

# Introduction

The Integrus system is a language and audio distribution system that provides both the owners and the users of conference venues with a versatile means of language and audio distribution. Since it is essentially a wireless system, conference delegates have considerable freedom of movement within the conference venue, as they are not physically connected to the system. The use of digital audio means that additional information can be sent with the interpretation channels, and a high signal/noise ratio can be achieved. The system can transmit up to 32 languages or audio channels simultaneously, and the high-quality audio signals received by the delegates’ headphones leads to high speech intelligibility. The Integrus system conforms to all the relevant ISO and IEC standards.

# Scope of Specification

This specification shall cover the provision, installation and maintenance of the language and audio distribution system, which includes a transmitter, radiators, receivers, headphones and ancillary equipment.

The specific functions needed in any individual situation shall be provided by selection and combination of the required system units. The system shall be extendible, both functionally and in size, by the addition of the required modules or units.

# System Summary

## System overview

The system shall provide interference-free, high-quality audio distribution, which shall enable delegates to listen to language interpretations at conferences. It shall avoid disturbance from lighting systems by operating in the 2 to 8 MHz frequency band. It shall provide high-quality audio signals by employing advanced digital technology to minimize transmission errors and increase the signal-to-noise ratio. It shall enable the transmission of up to 32 separate channels. It shall also be possible to transmit a lesser number of higher-quality audio signals by 'combining' channels.

The transmitter shall be the central element in the system. It shall accept inputs from either analogue or digital sources, modulate these signals on to carrier waves, and then transmit the waves to infra-red radiators located elsewhere in the conference venue. The transmitter shall be suitable for 19-inch rack or table-top mounting and shall have a dedicated slot for accommodating special interface modules to ensure compatibility with these external signal sources.

The infra-red radiators shall output a modulated infra-red signal which conference delegates shall be able to receive on portable infra-red receivers. This infra-red signal shall be demodulated by the receivers and an audio signal shall be made available at an output that accepts headphones.

The delegate shall be able to listen to the audio signal via the headphones. The system shall be wireless and the delegates shall require no physical connection to the system. One or more infra-red radiators shall be installed and positioned in accordance with their technical specifications.

The system shall be of a modular design and it shall be possible to connect various combinations of a system. Systems shall be expanded or reduced in size by adding or removing equipment.

The full range of Integrus products shall include a transmitter, audio input and interpreter modules, radiators and receivers. This range shall be complemented by headphones, battery charging equipment and radiator mounting equipment, all of which shall be fully compatible with and easily integrated into the system.

Signal transmission and processing shall be by means of advanced digital audio and infra-red technology. This advanced digital and infra-red technology shall result in high level sound quality and speech intelligibility with no losses in signal quality or level during transmission. There shall be virtually no background noise, interference, cross talk or distortion.

## System Functions

The system in its most complete configuration shall provide all of the following functions by means of purpose-built professional equipment:

* Interfacing with DCN Next Generation systems;
* Interfacing with analogue systems such as CCS 800;
* Interfacing with emergency systems such as Praesideo and Plena;
* Accepting asymmetrical inputs;
* Generating DQPSK modulated carrier waves for up to 32 channels and transmitting these carrier waves to the infra-red radiator(s);
* Radiating modulated infra-red light at an intensity sufficient to ensure strong signal reception anywhere within the conference venue (subject to the stated specifications of the radiators);
* Enabling conference delegates to receive, select and listen to distributed languages and audio channels within the conference venue, by means of infra-red receivers and headphones;
* Providing facilities for mounting the infra-red radiators and storing and recharging infra-red receivers.

All these functions shall be provided by the system.

The system shall be simple and logical to operate by all personnel concerned as well as by delegates, and shall comply with accepted professional standards and practices for all the functions provided.

## Compliance

The system shall comply with all applicable regulations and standards for equipment of this type, and especially with the IEC 61603 part 7, the standard for digital infra-red transmission for audio signals for conference and similar applications and IEC 60914, the standard for conference systems. In addition, the system shall comply with all applicable international, national and local regulations for the design, construction and installation of electrical equipment.

## First-line maintenance

The system design shall permit fast and effective fault location and correction by local personnel. This shall be supported by built-in self-diagnostic functions. In particular, the transmitter shall have a display, which provides feedback about the system status and shall have a built-in mini infra-red radiator for system monitoring. System testing shall be possible by means of a test signal generated per audio input by the transmitter and by checking the coverage of the radiators by means of the receivers in a measurement mode. The infra-red radiators shall contain status indication LEDs.

## Transmission Characteristics

The system shall have the following transmission characteristics.

|  |  |
| --- | --- |
| IR transmission wavelength | 870 nm |
| Modulation frequency | Carriers 0 to 5: 2 to 6 MHz, according to IEC 61603 part 7  Carriers 6 and 7: up to 8 MHz |
| Protocol and modulation | DQPSK, according to IEC 61603 part 7  60603 part 7 |

## System Audio Performance

The system shall have the following audio performance, measured from the audio input of a transmitter to the headphone output of a receiver:

|  |  |
| --- | --- |
| Audio frequency response | Standard quality:  20 Hz to 10 kHz (-3 dB) Premium quality:  20 Hz to 20 kHz (-3 dB) |
| Total harmonic distortion at 1 kHz | < 0.05 % |
| Crosstalk attenuation at 1 kHz | > 80 dB |
| Dynamic range | > 80 dB |
| Weighted signal-to-noise ratio | > 80 dB(A) |

## Cabling and System Limits

The used cable shall be of the type 75 Ohm RG 59.

The maximum number of radiators per HF output shall

be 30. The maximum cable length per HF output shall be 900 m.

# Transmitter and Modules

## Transmitter

The transmitter shall be suitable for 19-inch rack or table-top mounting and shall contain a dedicated slot for one module. The transmitter is the central element in the system. It shall accept analogue or digital input (from DCN Next Generation) and shall modulate these signals onto carrier waves and transmit these carrier waves to radiators located in the room.

The transmitter shall offer the following features and benefits:

* Universal mains power facility for use worldwide
* Distribution of a maximum of 4, 8, 16 or 32 audio channels
* Suitability for use with DCN Next Generation or analogue systems like the CCS 800
* Automatic distribution of emergency messages to all channels
* Auxiliary mode for distribution of music to all channels during a break
* Flexible configuration of channels and channel quality modes for efficient distribution
* Adjustable sensitivity for each input to enable fine tuning of audio levels
* Test mode, which produces a different frequency tone for each input/channel, with the tone gradually rising as the channels are stepped through.
* Slave mode for distribution of signals from another transmitter, so multiple rooms can be used
* Built-in mini infra-red radiator for audio monitoring
* Radiator and system status indication via display
* Configuration of transmitter and system via a display and one single rotary push button
* Assignment of a unique name by the installer for each transmitter for easy identification
* Assignment of a unique name by the installer for each audio channel. It shall be possible to select these names from a list of options or enter them manual.
* Automatic standby/on function
* Automatic synchronization to the number of channels in use in a DCN Next Generation system
* 19" (2U) housing for table top use or rack mounting
* Handgrips for easy transportation
* 19" rack mounting brackets, detachable feet and mounting accessories for modules included
* System installation and operating manual on CD-ROM
* Mains cable

The transmitter shall have the following controls and indicators:

* 2 x 16 character LCD display for status information and transmitter configuration
* Rotary push button for navigation through menus and configuration
* Power on/off switch on front panel

The transmitter shall offer the following interconnection facilities:

* Male Euro socket for mains connection
* Slot with audio data bus connector (H 15, female) for accepting audio input and interpreter module
* 4, 8, 16 or 32 cinch connectors for input of asymmetrical audio signals
* Two XLR sockets for input of symmetrical signals of floor, emergency messages or music
* One terminal block socket for distribution of emergency messages to all channels
* 3.5 mm stereo headphone socket for monitoring inputs and channels
* One BNC connector for accepting an HF signal from another transmitter
* Six BNC connectors for output of HF signal to up to 30 radiators
* Two Optical Network Connectors for connection within a DCN Next Generation system

The transmitter shall have the following physical characteristics:

|  |  |
| --- | --- |
| Mounting | Brackets for 19" rack mounting or fixing to a table top  Detachable feet for free-standing use |
| Dimensions (H x W x D) | Table top use, without brackets, with feet: 92 x 440 x 350 mm  (3.6 x 19.0 x 13.8 in)  19" rack use, with brackets, without feet: 88 x 483 x 350 mm  (3.5 x 19.0 x 13.8 in),  36 mm (1.4 in) in front of brackets,  372 mm (14.6 in) behind brackets |
| Weight | Without brackets,with feet:  6.8 kg (15.0 lbs) |
| Finish | Charcoal with silver |

The transmitter shall have the following electrical characteristics:

* Asymmetrical audio inputs: +3 dBV nominal,+6 dBV maximal(+/-6 dB)
* Symmetrical audio inputs: +15 dBV nominal, +18 dBV maximal (+/- 6 dB)
* Emergency switch connector: emergency control input
* Headphone output: 32 Ohm to 2 kOhm
* HF input: nominal 1 Vpp, minimum 10 mVpp, 75 Ohm
* HF output: 1 Vpp, 6 VDC, 75 Ohm
* Mains voltage: 90 to 260 V, 50 to 60 Hz
* Power consumption: maximal 55 W
* Power consumption (standby): 29 W

The transmitter shall be a Bosch INT-TX04, INT-TX08, INT-TX16, INT-TX32 or similar.

## Audio Input and Interpreter Module

The audio input and interpreter module shall be used for interfacing the system with analogue conference systems. Eight symmetrical audio inputs at the back of the module shall be routed to an audio bus. The symmetrical audio input and interpreters module shall also accept inputs from auxiliary audio input sources such as public address systems.

The audio input and interpreter module shall offer the following features and benefits:

* Direct connection of up to 12 LBB 3222/04 Interpreter Desks for six languages
* Routing of floor signal (for instance from a CCS 800 discussion system) to Interpreter Desks
* Eight symmetrical inputs
* Facility for mounting input transformers for galvanic isolation between audio source and the transmitter

The audio input and interpreter module shall have the following controls and indicators:

* On-board switches, which shall be adjustable for directly connecting interpreter desks or other audio sources
* An on-board switch, which shall be used to match the amplification of floor, signals from CCS 800 or from other analogue conference systems
* An on-board switch, which shall be used to replace the interpretation signal with the floor signal for distribution to the listeners when an interpreter channel is not in use

The audio input and interpreter module shall offer the following interconnection facilities:

* Symmetrical analogue audio input; 25-pole female sub-D connector
* Audio and data bus connector; H 15 male connector

The audio input and interpreter module shall have the following physical characteristics:

|  |  |
| --- | --- |
| Mounting | Mounting plate and 2 screws  included |
| Dimensions (H x W x D) | 100 x 54 x 231 mm  (3.9 x 2.1 x 9.1 in) |
| Weight | 188 g (0.41 lb) |

The audio input and interpreter module shall have the following electrical characteristics:

* Audio input level with AGC:

-16.5 dBV (150 mVeff) to +3.5 dBV

(1500 mVeff)

* Audio input level without AGC:

-4.4 dBV (600 mVeff)

* Asymmetric input impedance: ≥ 10 kOhm
* DC input impedance: ≥ 200 kOhm

The audio input and interpreter module shall be the

LBB 3422/20 or similar.

## Flight Case

The flight case shall be used for storing and transportation of two 19” units, e.g. one central control unit plus one transmitter or audio expander..

The flight case shall have the following features and benefits:

* Robust construction with reinforced corners
* Easy to carry and store
* Shaped interior
* Holds up to two 19” units

The flight case shall have the following physical characteristics:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 510 x 460 x 290 mm  (20 x 18 x 11 in) |
| Weight | 6.0 kg (13 lbs) |
| Finish | Grey |

The flight case shall be the DCN-FCCCU or similar.

# Radiators and Accessories

## Medium and High Power Radiators

The infra-red radiators shall be medium and high-power infra-red radiators that are suitable for use in large areas.

A selectable power output, coupled with the effective directionality of the radiators, shall give very good coverage of larger venues or halls with high ceilings. By strategic positioning of multiple units, even larger areas shall be covered economically and easily. If the radiators are not receiving carrier waves, the radiators shall switch to standby mode.

The radiator shall offer the following features and benefits:

* The medium power radiator covers up to 1000 m2 (one carrier, 4 standard quality channels)
* The high power radiator covers up to 2000 m2 (one carrier, 4 standard quality channels)
* Power output selection for efficiency and economy
* Universal mains power facility for use worldwide
* No fan - cooled by convection - for quieter operation and less moving parts to wear out
* LED indicators for radiator status checking
* Communication between radiator and transmitter for easy checking by the operator
* Automatic switching on when transmitter is switched on and vice versa
* Automatic gain control to ensure the IREDs (infra-red emitting diodes) function with maximum efficiency
* Automatic cable equalization to ensure maximum transmission efficiency with different quality of cables
* Automatic cable termination for simplified installation
* Temperature protection circuitry for automatic switching of radiator from full- to half- power if the temperature becomes too high
* Brackets for mounting on ceiling and floor stand, for simplified installation
* Adjustable radiator angle to ensure maximum coverage
* IREDs protected by a cover plate, so the units shall be easy to maintain and clean
* Attractive and stylish design
* Mains cable

The radiator shall have the following controls and indicators:

* Two yellow LEDs: one on each radiator panel to indicate that this panel is switched on and is receiving carrier waves from the transmitter
* Two red LEDs: one on each radiator panel to indicate that this panel is in standby mode
* Red and yellow LEDs simultaneously illuminated to indicate the radiator panel is malfunctioning
* Red LED flashing and yellow LEDs to indicate the radiator panel is in temperature protection mode
* Power reduction switch to reduce the output of the radiator to half-power
* Two delay compensation switches to compensate for differences in cable lengths between transmitter and radiators

The radiator shall offer the following interconnection facilities:

* Male Euro socket for mains connection
* HF input and output connectors (2 x BNC) for connection to transmitter and loop-through to other radiators

The radiator shall have the following physical characteristics:

|  |  |
| --- | --- |
| Mounting | A suspension bracket shall be used for direct ceiling mounting  An adaptor with ½” Whitworth or M10 thread shall be used for mounting on floor stands  A wall mounting bracket shall be used for fixing the radiator to wall surfaces |
| Dimensions  (H x W x D) | LBB 4511/00 without bracket  200 x 500 X 175 mm (7.9 x 19.7 x 6.9 in)  LBB 4512/00 without bracket  300 x 500 x 175 mm (11.9 x 19.7 x 6.9 in)  Radiator angle 0,15 and 30° for floor-stand mounting 0, 15, 30, 45, 60, 75 and 90° for wall/ceiling mounting |
| Weight | LBB 4511/00 without bracket6.8 kg (15 lbs)  LBB 4511/00 with bracket  7.6 kg (17 lbs)  LBB 4512/00 without bracket  9.5 kg (21 lbs)  LBB 4512/00 with bracket  10.3 kg (23 lbs) |
| Finish Bronze coloured | Bronze colored |

The radiator shall have the following electrical and optical characteristics

* Number of IREDs: 260 (LBB 4511/00),   
  480 (LBB 4512/00)
* Total IR output at 20 °C:

8 Wrms 16 Wpp (LBB 4511/00),

16 Wrms 32 Wpp (LBB 4512/00)

* Total optical peak intensity:

9 W/sr (LBB 4511/00),

18 W/sr (LBB 4512/00)

* Angle of half intensity: +/- 22°
* HF input: nominal 1Vpp, minimal 10 mVpp
* HF output: 1 Vpp, 6 VDC, 75 Ohm
* Mains voltage: 90 to 260 V, 50 to 60 Hz
* Power consumption:

100 W (LBB 4511/00),

180 W (LBB 4512/00)

* Power consumption (standby): 8 W (LBB 4511/00), 10 W (LBB 4512/00)

The radiator shall be the Bosch LBB 4511/00, LBB 4512/00 or similar.

## Wall Mounting Bracket

The wall mounting bracket shall be used for mounting the infra-red radiator.

The wall mounting bracket shall have the following physical characteristics

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 200 x 280 x 160 mm  (7.9 x 11.0 x 6.3 in) |
| Weight | 1.8 kg (4.0 lb) |
| Finish | Quartz grey |

The wall mounting bracket shall be the Bosch LBB 3414/00 or similar.

## Flight Case

The flight case shall be used for storing and transportation of radiators and cables.

The flight case shall have the following features and benefits:

* Robust construction with reinforced corners
* Easy to carry and store
* Shaped interior
* Holds one radiator

The flight case shall have the following physical characteristics:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 250 x 540 x 400 mm  (9 x 21 x 16 in) |
| Weight | 7.0 kg (15 lbs) |
| Finish | Grey |

The flight case shall be the INT-FCRAD or similar.

# Receivers, Battery Packs, Charging Units and Storage Suitcases

## Receivers

These ergonomically designed receivers shall incorporate the latest electronics technology - including a specially designed IC - to ensure maximum performance and a long battery lifetime. The receivers shall be suitable for both language and music distribution.

The receiver shall offer the following features and benefits:

* Specially-designed IC for maximum performance and a long battery life time
* Recharging electronics integrated in the chip to ensure optimum charging performance
* 2-digit LCD display with battery and reception status indication
* Synchronization facility so number of available channels is always the same as the number of channels in use by the system. This shall eliminate the need to scroll through unused channels
* Automatic muting of audio signal when the signal is too low, to ensure that the user shall only receive high-quality audio
* Power via disposable batteries (2x AA alkaline batteries, not included) or environmentally-friendly NiMH rechargeable battery pack
* No power used when headphone is disconnected
* Clip for easy wearing
* Measurement mode for easy checking of radiator coverage
* Attractive and stylish design
* Up to 200 hours operation with alkaline batteries
* Up to 75 hours operation with battery pack
* Recharge from empty to full capacity within 1 hour and 45 minutes

The receiver shall have the following controls and indicators:

* 2-digit LCD display with channel number, battery and reception status indication
* On/off button
* Volume control slide adjuster
* Channel selection up/down buttons
* Charging indicator LED

The receiver shall offer the following interconnection facilities:

* 3.5 mm (0.14 in) stereo jack output socket for headphones
* Battery contacts for use with AA alkaline batteries
* Connector for use with battery packs
* Charging contacts on the left-hand side of the receiver for compatibility with LBB 4560/XX charging units

The receiver shall have the following physical characteristics:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 155 x 45 x 30 mm  (6.1 x 1.8 x 1.2 in) |
| Weight | Exclusive batteries:  75 g (0.16 lb)  Inclusive batteries:  125 g (0.28 lb) |
| Finish | Charcoal with silver |

The receiver shall have the following electrical and optical characteristics

* IR irradiance level: 4 mW/m2 per carrier
* Angle of half sensitivity: +/-50°
* Headphone output level at 2.4V (battery voltage):

450 mVrms (speech at maximum volume,

32 Ohm headphone)

* Headphone output frequency range: 20 Hz to 20 kHz
* Headphone output impedance: 32 Ohm to 2 kOhm
* Max. signal-to-noise ratio: > 80 dB(A)
* Supply voltage: 1.8 to 3.6 V, nominal 2.4 V
* Power consumption at 2.4 V:
* 15 mA (speech at maximum volume, 32 Ohm headphone)
* Power consumption (standby): < 1 mA

The receiver shall be the Bosch LBB 4540/04,   
LBB 4540/08, LBB 4540/32 or similar.

## NiMH Battery Pack

These NiMH battery packs, available in sets of 10, shall be suitable for use with the receivers.

The NiMH battery pack shall have temperature sensor for optimal charging process

The NiMH battery pack shall have the following physical characteristics:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 14 x 28 x 49 mm (0.5 x 1.1 x 1.9 in) |
| Weight | 50 g (0.11 lb) |

The NiMH battery pack shall have the following electrical characteristics:

|  |  |
| --- | --- |
| Voltage | 2.4 V |
| Capacity | 1100 mAh |

The NiMH battery pack shall be the Bosch LBB 4550/00 or similar.

## Charging Units

The charging units shall be used to recharge and store receiver units.

The charging units shall offer the following features and benefits:

* Accommodation of up to 56 receivers
* Universal mains power facility for use worldwide
* Mains input with loop-through facilities
* Rapid recharging: maximum time required; 1 hour and 45 minutes
* Mains cable

The charging units shall have the following controls and indicators:

* On/off switch

Charging status indication shall be on the receivers

The charging units shall offer the following interconnection facilities:

* Mains input with loop-through facility; male and female Euro mains socket
* 56 charging contacts. Compatibility with LBB 4540/XX receivers

The charging units shall have the following physical characteristics:

|  |  |
| --- | --- |
| Mounting | LBB 4560/50: screws and plugs for wall mounting shall be included |
| Dimensions (H x W x D) | LBB 4560/00: 230 x 690 x 530 mm  (9 x 27 x 21 in)  LBB 4560/50:  130 x 680 x 520 mm  (5 x 27 x 20 in) |
| Weight excl receivers | LBB 4560/00: 15.5 kg (34 lbs)  LBB 4560/50: 11.2 kg (25 lbs) |
| Finish | Charcoal with grey |

The charging units shall have the following electrical characteristics:

|  |  |
| --- | --- |
| Mains voltage | 90 to 260 V, 50 to 60 Hz |
| Power consumption | 56 receivers charging: 270 W  Standby, no receivers in the charging unit: 17 W |

The charging units shall be the Bosch LBB 4560/00 (charging suitcase), LBB 4560/50 (charging cabinet) or similar.

## Flight Case

The flight suitcase shall be used for storing and transportation up to 100 receivers.

The flight case shall have the following physical characteristics:

|  |  |
| --- | --- |
| Dimensions (H x W x D) | 207 x 690 x 530 mm  (8 x 27 x 21 in) |
| Weight | 7.5 g (16.5 lbs) |
| Finish | Grey |

The storage suitcase shall be the INT-FCRX or similar.

# Headphones

## Lightweight Stereo Headphones

The lightweight stereo headphones shall be suitable for use with the receivers. Dishwasher proof solid ear pads and replacement ear pads shall be suitable for use with these lightweight stereo headphones.

The lightweight stereo headphones shall have the following physical and electrical characteristics:

|  |  |
| --- | --- |
| Connection | 1.3 m (4 ft) cable with 3.5 mm (0.14 in) gold-plated jack plug and durable cable |
| Impedance | 32 Ohm |
| 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 |

The lightweight stereo headphone shall be the Bosch   
LBB 3443/10 or similar. The set of solid ear pads shall be the Bosch HDP-LWSP or similar. The set of replacement ear pads shall be the Bosch LBB 3443/50 or similar.

## Under The Chin Headphones

The under the chin headphones shall be suitable for use with the receivers. A set of replacement ear tips shall be suitable for use with these under the chin headphones.

The under the chin headphones shall have the following physical and electrical characteristics:

|  |  |
| --- | --- |
| Connection | 1.2 m (4 ft) cable with 3.5 mm  (0.14 in) gold-plated jack plug |
| Impedance | 300 Ohm |
| Audio frequency response | 50 Hz to 5 kHz (-10 dB) |
| Power handling capacity | 60 mW |
| Sensitivity (1kHz) | 107 dB SPL/earpiece at 1 mW per earpiece |
| Weight | 33 g (0.07 lb) |
| Finish | Black |

The under the chin headphones shall be the   
LBB 3441/10 or similar. The set of replacement   
ear tips shall be LBB 3441/50 or similar

## Single Earphone

The single earphone shall be suitable for use with the receivers.

The single earphone shall have the following 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 per earpiece |
| Weight | 25 g (0.06 lb) |
| Finish | Dark grey |

The single earphone shall be the LBB 3442/00 or similar.

## 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 strength | 100 mA/m 15 cm (6 in) above loop at 85 μW at 1 kHz input (IEC 60118-4) |
| Weight | 45 g (0.10 lb) |
| Finish | Charcoal with silver |

The induction loop neckband shall be the HDP-ILN or similar.

## High Quality Dynamic Headphones

The high quality dynamic headphones shall be suitable for use with the receivers. A set of replacement ear pads shall be suitable for use with these high quality dynamic headphones.

The high quality dynamic headphones shall have the following physical and electrical characteristics:

|  |  |
| --- | --- |
| Connection | 1.2 m (4 ft) cable with 3.5 mm (0.14 in) gold-plated jack plug |
| Impedance | 360 Ohm |
| Audio frequency response | 250 Hz to 13 kHz (-10 dB) |
| Power handling capacity | 200 mW |
| Sensitivity (1 kHz) | 96 dB SPL per earpiece at 1 mW per earpiece |
| Weight | 90 g (0.20 lb) |
| Finish | Black/grey |

The high quality dynamic headphone shall be the   
LBB 3015/04 or similar. The replacement ear pads   
shall be the LBB 9095/50 or similar.

# 6-Channel Interpreter Desk and Accessories

## 6-Channel Interpreter Desk

The 6-channel interpreter desk shall be a single-user, microprocessor-controlled interpreter desk, which shall offer an economical solution for providing interpretations to conference participants. It shall interface with the transmitter via the symmetrical audio input and interpreters module. The floor signal shall be routed from the transmitter to the interpreter desks.

It shall be possible to use the 6-channel interpreter desk with loudspeaker either as a free-standing, desktop or flush-mounted unit.

The 6-channel interpreter desk shall offer the following features and benefits:

* Built-in loudspeaker
* Accommodation of 6 different language channels plus the original floor language
* Loop-through connection possibilities for up to 12 interpreter desks within and/or between interpreter booths
* Accommodation of up to three interpreter desks per booth
* Incoming channel pre-selector key to eliminate the need to manually search through all available language channels
* Quick switching between the floor language and the channel set on the channel selector to reduce the chance of operator errors
* Electronic channel interlock function to prevent interpreters in different booths from using the same output channel
* Auto relay enable function to allow the interpreter to provide the auto relay language (OR2) for relay interpretation
* A disable function on channel B to allow the interpreter to disable channel B while ensuring that the desk remains connected to channel A

The 6-channel interpreter desk shall have the following controls and indicators:

* Microphone mounted on a flexible stem, complete with a light ring, which shall illuminate when the microphone is on
* Headphone volume, treble and bass controls
* A-B channel selector key with channel select indicators
* Six outgoing B-channel select keys with channel select indicators
* Outgoing ‘OR2’ (auto relay) indicator
* ‘Channel engaged’ indicators to show which channels are in use by other interpreters
* Microphone ‘mute’ key
* Microphone activating key with LED status indicator
* Select key with LED indicators for fast switching between the original floor language and the channel set on the channel selector
* Incoming channel ‘OR2’ (auto relay) indicator to show that the original floor language has been replaced by a transfer interpretation channel, when the auto-relay facility is in operation.
* Incoming language channel selector for headphone monitoring
* Call key (voice) to provide two-way communication between interpreter and chairman/operator
* Outgoing message key
* Incoming message indicator
* Rotary switch to preset the outgoing channel via the A output

The 6-channel interpreter desk shall offer the following interconnection facilities:

* 3 m cable terminated with a 25-pin sub D-type

connector

* 25-pin sub D-type socket for loop-through connections
* 6.3 mm (0.25 in) stereo jack headphone connectors
* 15-pole 180° DIN-type socket for connection of interpreter’s headset with microphone, plus switch to mute the built-in microphone
* Auxiliary socket (message) for the desk’s message function

The 6-channel interpreter shall have the following physical characteristics

|  |  |
| --- | --- |
| Mounting | Table top or flush mounting |
| Dimensions  (H (front)-H(rear) x W x D) | 20-58 x 250 x 189 mm (0.9-2.28 x 9.84 x 7.44 in) |
| Weight | 1.75 kg (3.85 lb) |
| Finish | Light grey |

The 6-channel interpreter desk shall have the following electrical characteristics:

|  |  |
| --- | --- |
| Audio frequency response | 125 Hz (-10 dB) to 12.5 kHz (-2 dB) |
| Rated equivalent | < 32 dB sound pressure due to inherent noise |
| Total harmonic distortion | < 5% at overload |
| Crosstalk attenuation | > 66 dB |

The 6-channel interpreter desk shall be the LBB 3222/04 or similar.

## Interpreter Headphones

These lightweight, dynamic headphones shall be suitable for direct connection to the 6-channel interpreter desk. A set of replacement ear pads shall be suitable for use with these high quality dynamic headphones.

The interpreter headphones shall have the following physical and electrical characteristics:

|  |  |
| --- | --- |
| Connection | 1.5 m (59.05 in) cable with 6.3 mm (0.25 in) jack plug |
| Impedance | 250 Hz to 13 kHz (-10 dB) |
| Power handling capacity | 200 mW |
| Sensitivity (1kHz) | 97 dB SPL/earpiece at 0 dBV/system  96 dB SPL/earpiece at 1 mW/earpiece |
| Weight | 78 g (0.17 lb) |
| Finish | Black/grey |

The interpreter headphones shall be the LBB 9095/30 or similar. The replacement ear pads shall be the LBB 9095/50 or similar.

## Extension Cables

The extension cables shall be used to interconnect 6-channel interpreter desks when the standard cabling is too short.

The extension cables shall have the following physical characteristics:

|  |  |
| --- | --- |
| Type of connectors | 25 pole sub-D-type with sliding lock mechanism and 25 pole sub-D-type socket with pin lock mechanism |
| Finish | Grey |

The extension cable shall be –or similar to-:

* LBB 3306/05 Extension cable assembly 5 m with

25-pole sub-D-type plug and socket

* LBB 3306/20 Extension cable assembly 20 m with

25-pole sub-D-type plug and socket

* LBB 3306/00 100 m installation cable without connectors

**Product index**

**Part number** **Description Page**

**Transmitters**

INT-TX04 4-Channel Transmitter 6

INT-TX08 8-Channel Transmitter 6

INT-TX16 16-Channel Transmitter 6

INT-TX32 32-Channel Transmitter 6

LBB 3422/20 Symmetrical Audio Input and Interpreters Module 7

DCN-FCCCU Flight Case for Central Control Units 8

**Infra-red radiators**

LBB 4511/00 Medium-Power Radiator 8

LBB 4512/00 High-Power Radiator 8

LBB 3414/00 Wall Mounting Bracket 9

INT-FCRAD Flight Case for Radiator 9

**Infra-red receivers**

LBB 4540/04 4-Channel Pocket Receiver 9

LBB 4540/08 8-Channel Pocket Receiver 9

LBB 4540/32 32-Channel Pocket Receiver 9

LBB 4550/00 NiMH Battery Pack 10

**Charging units**

LBB 4560/00 Charging Suitcase 10

LBB 4560/50 Charging Cabinet 10

INT-FCRX Flight Case for 100 LBB 4540 Pocket Receivers 11

**Headphones**

LBB 3443/00 Lightweight Stereo Headphones 11

LBB 3434/10 Lightweight Stereo Headphones with durable cable 11

LBB 3443/50 100 Pair of Replacement Ear pads 11

HDP-LWSP Solid Ear pads for LB 3443 Lightweight Stereo Headphones 11

LBB 3441/10 Under The Chin Stereo Headphones 11

LBB 3441/50 1000 Replacement Ear tips 11

LBB 3442/00 Single Earphone 12

HDP-ILN Induction Loop Neckband 12

LBB 3015/04 High Quality Dynamic Stereo Headphones 12

LBB 9095/50 25 Pair of Replacement Ear pads 12

LBB 9095/30 Interpreter Headphone 13

**6-channel interpreter desk**

LBB 3222/04 6-Channel Interpreter Desk with Loudspeaker 12

LBB 3306/00 100 m installation cable without connectors 13

LBB 3306/05 5 m extension cable assembly with 25-pole sub-D-type plug and socket 13

LBB 3306/20 20 m extension cable assembly with 25-pole sub-D-type plug and socket 13

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