Praesideo - Digital Public Address and Emergency Sound System

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Praesideo - Digital Public Address and Emergency Sound System

Praesideo is a fully digital public address system that meets all the requirements placed by professional users on a public address/emergency system. The system brings highly innovative and advanced digital technology to the public address market. The processing and communication of both audio signals and control data entirely in the digital domain makes the system superior to other currently available public address and emergency sound systems. Digital signal processing allows significant improvements in audio quality to be achieved. The Praesideo system is designed for configuration from a PC, which makes installation and setting of operating parameters very simple and user-friendly.

All audio processing is performed in the digital domain. Communication between the units is via plastic fiber or glass fiber cabling, depending on the distance between the units. The cabling uses the daisy chain principle. This makes the cabling and installation very quick, simple and easy. The system cabling is a closed loop, which allows redundancy to be achieved.

User-friendly Software Control

The system is supplied with user-friendly software for system configuration. This allows all system functions to be configured. The software is based on web technology, which gives authorized users full freedom of configuration in terms of time and location. The simplified and accurate organization of the programming features makes navigation highly user-friendly and fault-tolerant. The software also provides clear indication of any parameters, which have not been programmed before exiting from any stage of the configuration process.

Network Approach

The system architecture is based on daisy-chaining of the units. It is possible to add or remove equipment anywhere in the network without affecting the performance of other units, provided that the network connection is available. This makes the system easily expandable by the customer, without adding any additional electronics at the network controller unit. Thanks to this network architecture, users can start with a small system in the initial stage and expand the system later simply by adding the required new units to the existing network.

The system can be configured for redundant cabling using a ring cabling structure.

Distributed Control

The system is designed for distributed control of various system functions. The external interfaces, which are control inputs and outputs can be located anywhere in the network. The processing of audio input and output signals is located in each unit. This allows the network controller to concentrate on other activities like routing of announcement taking actions on control inputs, etc. As a result the response times are much shorter than for systems with centralized processing of all signals.

Combination of Functions

The Praesideo range of equipment has multiple functions combined in a single unit. This feature drastically reduces the number of different types of equipment used in the system. For example functions like audio processing, audio delay, amplifier monitoring including spare switching and speaker line monitoring are provided in the power amplifier unit itself. This makes the overall system highly cost-effective. The flexible architecture of the Praesideo range of equipment allows the customer to locate any type of equipment anywhere in the building. The configuration software enables the user to configure all the functional parameters. No programming is required at the equipment end, which drastically reduces the installation and commissioning time.

IEC 60849 Certified

The Praesideo range of equipment complies with the various emergency standards, which are applicable all over the world. In fact Praesideo is the first system which is certified according to the IEC 60849 standard. The network controller is capable of monitoring all the units in the system, from the microphone capsule of the call station to the loudspeaker line. A built-in memory stores the last 200 fault messages. Any fault is reported back to the network controller. The system also meets emergency requirements for emergency call stations. The open system concept, with the possibility for large numbers of control inputs and outputs satisfies even difficult emergency requirements.

External Interfaces

The interfaces to the system can be audio, control input or Ethernet. The Ethernet open interface is provided at the network controller.

The audio and control inputs can be anywhere in the system, for example at the power amplifier, audio expander or network controller.

The system accepts even low-level signals via the control inputs. The configuration allows the user to configure the input to initiate the desired actions in the system. The flexibility to route any input from one system unit to another makes it possible to use the Praesideo range of products for a wide range of public address and emergency sound system applications.

Reduced Installation Costs

The Praesideo architecture uses the daisy chain principle for both data and audio signals. This makes the system wiring very cost-effective, using 2 fiber cores for data and audio communication and a copper wire pair to supply power to the units. Power supply for the system units can be provided locally if the distances are very long.

Combining various functions in a single unit also makes the equipment more cost-effective than systems in which separate units have to be purchased for all the specific functions. This combination of functions also saves lot of rack space and further reduces installation costs.

High System Flexibility

The Praesideo system is a highly versatile system which gives the user a high degree of flexibility in the number of zones, call stations, audio inputs and outputs, control inputs and outputs, etc.

System Overview

Network Controller

The network controller is the heart of the system, and stores all control information. It also provides the Ethernet interface for connection to the PC to enable system configuration as well as diagnostic and logging functions. The network controller also stores the digital audio messages for automatic announcements. The controller monitors all the system components and reports any changes in status. The unit provides 4 audio inputs and 4 audio outputs, as well as 8 control inputs and 5 control outputs.

The control inputs can be used to trigger actions in the system. In the configuration software, the user can define the types of inputs. They can be programmed for momentary or toggle operation. Of course these functions are also available for other control inputs in the system. The control outputs can be used to initiate external actions, and can be linked to any of the input triggers.

The network controller stores the configuration details and the last 200 fault messages. The availability of the digital audio messages, the alarm tones and alarm tone generator and the control inputs are continuously monitored. To monitor the audio outputs an internally generated pilot tone can be provided to the audio outputs.

Audio Expander

The audio expander is used if the system requires additional audio inputs and outputs. The unit provides 4 transformer isolated audio inputs and 4 transformer isolated audio outputs, as well as 8 control inputs and 5 control outputs. The audio inputs can be configured for background music, microphone or line inputs. As for the network controller, the control inputs can be configured to initiate external actions.

Network Splitter
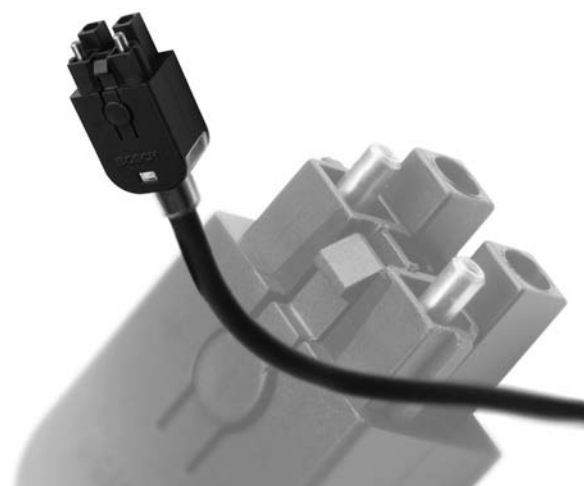
The network splitter allows the main network line to be split into branches. The branch lines are still monitored, but these do not have the redundant cabling of the main network line. The network splitter also has a provision to connect a 48 V DC supply which can be used if additional power is required. The network splitter can also be used as a repeater to extend the cable with another 50 meters of plastic fiber.

Fiber Interface

All the Praesideo system units have plastic fiber optic interfaces. Plastic fiber is used to interconnect nodes which are less than 50 meters apart. For distances of more than 50 meters, glass fiber optic cable is used. A fiber interface is used to convert from plastic to glass fiber or vice versa. The fiber interface has a power supply input and two control inputs, and can also be used if extra power has to be added. The control inputs can be used to monitor the power supply connected to the fiber interface.

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Power Amplifier

There are four types of power amplifier units in the Praesideo product range. These differ in the number of amplifier channels per frame and the power ratings of the individual amplifier channels. The types of power amplifiers are as follows:

LBB 4421/10	1 x 500 W Power Amplifier
LBB 4422/10	2 x 250 W Power Amplifier
LBB 4424/10	4 x 125 W Power Amplifier
LBB 4428/00	8 x 60 W Power Amplifier

The power amplifiers can be selected for 100 V, 70 V and 50 V output tapping. Audio input is provided via the fiber optic network cable.

The power amplifiers are equipped with amplifier monitoring and change-over relays. The amplifier provides short-to-ground and short-circuit detection functions. If an end-of-line supervision card is plugged in, the loudspeaker lines are also monitored for open circuits. The pilot tone for the monitoring is generated in the power amplifier itself.

The power amplifiers are equipped with audio processing facilities for each amplifier channel. It is possible to have 3 parametric equalizer sections and 2 shelving equalizers. The power amplifiers can be connected to the network line directly. Ambient microphone connection enables output level adjustment for maximum intelligibility.

The power amplifier has a provision for connecting a 48 V DC backup power supply. The 48 V is protected against reverse polarity, and availability of the 48 V supply is continuously monitored.

Call Station Basic

The call station basic has a direct network interface, one 'press to talk' key, a monitoring speaker and a headphone socket. The volume control on the front of the unit allows adjustment of the loudspeaker or headphone volume.

The unit can be connected to up to16 call station keypads. LEDs on the unit indicate system, call station and call status.

Call Station Keypad

The call station keypad has 8 selection keys and status indications. This unit is connected to a call station basic through a local interface. Each selection key has one 2-color LED which shows the status of the selection, allowing differentiation of whether the selected output/ resource is occupied by a higher- or lower-priority announcement.

It is possible to connect up to16 Call station keypad units to a call station basic. The power supply for the call station keypad is taken from the call station. The interconnecting cable between the units handles both data communication and the power supply.

Call Station Kit

The call station kit has the same functions as the call station basic, and is intended for building into custom-made units. The kit is supplied without a housing for easy installation in a custom-made housing. It has a power supply input for both the call station itself and the call station keypads. The external power supply can be monitored by connecting its fault control output to the control input of the call station kit.

Call Station Keypad Kit

The call station keypad kit is used in combination with the call station kit or call station basic. It has 8 logical inputs and 16 logical outputs. If the input is assigned to trigger specific functions, the corresponding outputs can be activated only for actions related to that particular input.

The control output of the call station keypad kit can be programmed for various functions, for example indication of emergency status in a particular zone.

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LBB 4401/00 Network Controller

The network control unit is the heart of the Praesideo system. The unit is capable of routing up to 28 simultaneous audio channels, delivering power to the system (except for power amplifiers), fault reporting and controlling of the system. The audio inputs can be announcements from call stations, background music or local audio inputs. The network control unit can be configured for any complex public address configuration via the PC. The PC need not be connected permanently to the unit as it works independently from the PC. If a PC is connected to the network controller unit, all status changes in the system can be displayed through the configuration and diagnostic & logging software, supplied with the unit.

The unit can be free-standing on a tabletop or mounted in a 19" rack.

Features

- Public address and emergency control unit
- Fully digital
- 28 audio channels
- 8 supervised control inputs and 5 control outputs
- 4 audio inputs and 4 audio outputs
- Ethernet interface for configuration and diagnostic & logging functions
- Digital message storage
- Stores up to last 200 fault messages
- IEC60849 Certified

Functions

- The network controller has 4 analog audio inputs. Of these, 2 are selectable between microphone and line. The other 2 inputs are fixed as line inputs.
- The 8 control inputs are freely programmable for system actions, and priorities can be assigned to these inputs.
- The network controller has 4 analog audio line outputs.
- The audio line outputs have a selectable 20 kHz monitoring signal.
- The network controller has 5 control outputs of which three are programmable for faults or calls, and two are used to connect visual and audible fault indicators.
- The microphone/line inputs can be used as call inputs if they are programmed conditionally to any control inputs.

- The network controller can control up to 60 nodes.
- The nodes include equipment like power amplifiers, audio expander units, call stations, call station kits etc.
- The network controller is designed for redundant network cabling. The network can be wired as a branched network or redundant loop.
- To satisfy even the most complex public address and emergency requirements, the system is designed to handle 256 priorities, and can be configured for up to 244 zones.
- The unit has a switch mode power supply. The network controller is provided with a storage facility to store the last 200 fault messages in the system.
- The network controller can work independently of a PC connected to it. The PC can be disconnected after configuring the system. Address and version enquiry can be done using the front panel display and rotary control of the network control unit. The front panel has a 2 x 16-character LCD display and a rotary control to navigate through the menu and select the menu items.
- To meet the requirements for emergency sound systems automatic messaging is included in the network controller. The network controller has a connector for installing a commercially available compact flash memory card, with memory size according to the storage requirements for audio messages. Four messages can be played simultaneously.
- The status of the digital audio message storage and of the messages themselves is monitored. Audio messages (as a set of wav files) can be downloaded from a computer via the Ethernet link.
- The network controller monitors the status of all the equipment in the system and reports status changes. This monitoring extends from the capsule of a call station microphone to the end of a loudspeaker line. The external cables connected to the control inputs are monitored for short and open circuit. To monitor the audio outputs an internally generated pilot tone can be provided to the audio outputs.
- 7 attention tones, 3 test tones and 45 alarm tones are stored in the network controller unit. These tones can be accessed by any call stations or control inputs for announcement broadcast or alarm broadcast.
- The network controller has an internal real time clock for automatic playback of scheduled messages or automatic volume changes of announcements or background music, e.g. during evening hours
- The network controller has extensive audio processing possibilities for audio inputs and audio outputs. Parametric equalization, limiter and gain can be adjusted using the configuration software.
- The digital audio processing has 3 parametric and 2 shelving equalizer sections.
- The network controller is provided with a monitoring loudspeaker and a headphone socket for monitoring of audio channels.

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Certifications and Approvals

Safety	According to IEC60065-98 CE / FCC IEC60849
Immunity	According to EN55103-2

Installation/Configuration Notes

Rear view

Interfaces

- Ethernet interface for connection to a PC or any external devices/systems
- 2 x system network connection

Indications and Controls

- 2 x 16-character LCD display for status display.
- Rotary/push control for selection of system enquiry mode and volume of the headphone or internal speaker.
- Power supply ON/OFF switch at rear.

Inputs

8 x control inputs

2 x analog audio inputs selectable between line or microphone
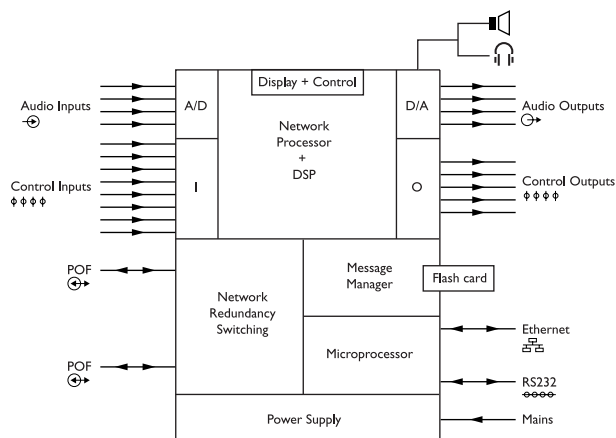
2 x analog line audio inputs

Outputs

- 5 x control outputs (of which two dedicated fault contacts)
- 4 x analog audio line outputs
- 1 x internal speaker
- 1 x headphone output

Rear Connections

- 1 x Ethernet interface
- 1 x RS232 interface
- 2 x system network connection
- 8 x programmable control inputs
- 2 x line audio inputs
- 2 x mic./line audio inputs
- 4 x line audio outputs
- 3 x programmable control outputs
- 2 x control output for faults
- 1 x mains connection

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Technical Specifications

Audio Inputs

Analog Line Inputs

Socket Type	• One female XLR and one stereo female Cinch for each input
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Signal to Noise Ratio	> 87 dBA at maximum level
CMRR	> 40 dB
XLR max. Input Range	+18 dBV to +6 dBV
Cinch max. Output Range	+6 dBV to -6 dBV

Analog Microphone Inputs (only inputs 1 and 2)

Socket Type	One female XLR
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Nominal Input Level	-57 dBV
Signal to Noise Ratio	> 62 dBA for dynamic range < 25 dB
CMRR	> 55 dB at 100 Hz
Input Impedance	1360 ohm
Phantom Supply	12 V ±1 V @ 15 mA
Input Range	-7 to 18 dB ref nominal input level

Audio Outputs

Socket Type	One male XLR and one stereo female Cinch for each output
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Output Impedance	< 100 ohm
Signal to Noise Ratio	> 89 dBA at maximum level
Output Crosstalk	< -85 dB
XLR Output Signal Range	+18 dBV to −12 dBV
Cinch Output Range	+6 dBV to −24 dBV
Distortion at 1 kHz	< 0.05%

Power Consumption

LBB 4401/00 only	14 W (ac)
LBB 4401/00 max. loaded	150 W (ac)

Mechanical

Mounting	Free-standing on a tabletop or mounted in a 19" rack
Dimensions (H x W x D)	• 88 x 483 x 400 mm (19"-mounting, with brackets, without feet) • 92 x 440 x 400 mm (table top, without brackets, with feet)
Weight	7 kg
Color	Charcoal grey with silver

Environmental

Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC • IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information

Model & Description

LBB 4401/00 Network Controller

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LBB 4402/00 Audio Expander

The audio expander can insert external audio to the system and extract audio from the system. This unit is provided with control inputs and outputs for external interfacing. The audio inputs can be routed permanently or conditionally to any of the zones or other audio outputs. The routing conditions are configured using the configuration software. The audio output can be programmed to extract audio from any of the audio inputs. The equipment can be used free-standing (tabletop) or in 19" rack mounting.

Features

- 4 audio inputs – 2 selectable mic./line and 2 line inputs
- 4 line audio outputs
- 8 supervised control inputs and 5 control outputs
- Audio processing functions
- Redundant network connection
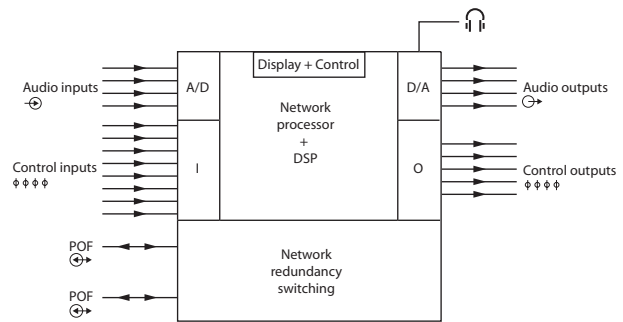- Headphone connection and VU meter for audio monitoring

Functions

- The audio expander has 4 transformer isolated analog audio inputs.
- 2 of these are selectable between microphone and line. The other 2 inputs are fixed as line inputs.
- The 8 control inputs are freely programmable for system actions, and priorities can be assigned to these inputs.
- The audio expander has 4 transformer isolated analog audio line outputs. The audio line outputs have a selectable 20 kHz monitoring signal.
- The 5 control outputs are freely programmable for faults and calls.
- The microphone/line input can be used like a call station input if it is programmed conditionally to any control input.
- The 2 x 16-character display and the rotary control enable status enquiries relating to that particular unit. The display shows the VU meter reading when the audio monitoring mode is selected. The audio can be monitored by using a headphone. The fault status of the unit is monitored and continuously reported to the network controller.
- The control inputs can be programmed for momentary or toggle operation. This selection can be made using the configuration software.

- Each control input has the ability to monitor the cable between the control inputs and the external switch for open-circuits and short-circuits. To monitor the audio outputs an internally generated pilot tone can be provided to the audio outputs.
- The audio expander is designed for redundant network cabling. The network can be either single branch or redundant loop.
- The digital audio processing is capable of 3 parametric and 2 shelving equalizer sections.
- The unit is powered from the network controller via the network cable.

Certifications and Approvals

Safety	According to IEC60065-98
	CE / FCC
	IEC60849
Immunity	According to EN55103-2

Installation/Configuration Notes

Interfaces

- 2 x system network connection

Indications and Controls

- 2 x 16-character LCD display for status display
- Rotary/push control for selection of system enquiry mode and volume of the headphone

Inputs

8 x control inputs

2 x analog audio inputs selectable between line or microphone

2 x analog line audio inputs

Outputs

- 5 x control outputs
- 4 x analog line level audio outputs
- 1 x headphone output

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Rear Connections

- 2 x system network connection
- 8 x programmable control inputs
- 2 x XLR line audio inputs
- 2 x XLR mic./line audio inputs
- 2 x Cinch line audio inputs
- 2 x Cinch mic./line audio inputs
- 4 x XLR line audio outputs
- 4 x Cinch line audio outputs
- 5 x programmable control outputs

Technical Specifications
Audio Inputs

Analog Line Inputs

Socket Type	• One female XLR and one stereo female Cinch for each input
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Signal to Noise Ratio	> 87 dBA at maximum level
CMRR	> 40 dB
Input Transformer	On all XLR Inputs
XLR max. Input Range	+18 dBV to +6 dBV
Cinch max. Input Range	+6 dBV to -6 dBV

Analog Microphone Inputs (only inputs 1 and 2)

Socket Type	One female XLR
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Nominal Input Level	- 57 dBV
Signal to Noise Ratio	> 55 dBA with 25 dB headroom
CMRR	> 55 dB at 100 Hz
Input Impedance	1360 ohm
Phantom Supply	12 V ±1 V @ 15 mA
Input Range	-7 to 18 dB ref. nominal input level

Audio Outputs

Socket Type	One male XLR and one stereo female Cinch for each output
Frequency Response	• -3 dB at 20 Hz and 20 kHz (tolerance ±1 dB) • 0 dB at 100 Hz, 1 kHz and 10 kHz (tolerance ±1 dB)
Output Impedance	< 100 ohm
Signal to Noise Ratio	> 89 dBA at maximum level
Output Crosstalk	< -85 dB
XLR Output Signal Range	+18 dBV to −12 dBV
Cinch Output Range	+6 dBV to −24 dBV
Distortion at 1 kHz	< 0.05%

Power Consumption

LBB 4402/00	5.6 W (dc)

Mechanical

Mounting	Free-standing on a tabletop or mounted in a 19" rack
Dimensions (H x W x D)	• 88 x 483 x 400 mm (19"-mounting, with brackets, without feet) • 92 x 440 x 400 (table top, without brackets, with feet)
Weight	7 kg
Color	Charcoal grey with silver

Environmental

Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC • IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information

Model & Description

LBB 4402/00 Audio Expander

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LBB 4404/00 CobraNet Interface

CobraNet is a registered trademark of Peak Audio, a Division of Cirrus Logic, Inc.

The CobraNet Interface can insert up to four audio channels from CobraNet into the Praesideo system and up to four audio channels from Praesideo into a CobraNet network. CobraNet, developed by Peak Audio, is a network protocol for real-time uncompressed digital audio distribution over industry standard 100Base-T Ethernet networks.

CobraNet audio channels can be configured as inputs to Praesideo, where they can be routed permanently or conditionally to any of the zones or audio outputs. The routing conditions are configured using the configuration software. Praesideo calls and background music (BGM) sources can be routed to CobraNet channels. Digital audio data is directly converted between Praesideo and CobraNet, with no other audio processing than sample rate conversion. Control inputs and outputs are provided for external interfacing. The equipment can be used free-standing (tabletop) or in a 19 inch rack.

Features

- 4 CobraNet audio inputs
- 4 CobraNet audio outputs
- 8 supervised control inputs and 5 control outputs
- Redundant Praesideo network connection
- Redundant CobraNet network connection
- Headphone connection and VU meter for audio monitoring

Functions

- The CobraNet Interface can simultaneously convert 4 digital audio channels from Praesideo to CobraNet and 4 digital audio channels from CobraNet to Praesideo.

- The CobraNet Interface can route audio channels between itself and other CobraNet Interfaces, in the same or in other Praesideo networks, or to third party CobraNet units.

- Only audio channels are routed via the CobraNet Interface, no control data. If CobraNet Interfaces are used as a link between multiple Praesideo systems, the open interface of the network controllers should be used for control by a PC master.

- The CobraNet Interface provides sample rate conversion between Praesideo's 44.1 kHz sample rate and CobraNet's 48 kHz sample rate. Volume levels are preserved.

- The 8 control inputs are freely programmable for system actions, and priorities can be assigned to these inputs.

- The 5 control outputs are freely programmable for faults and calls.

- The 2 x 16-character display and the rotary control enable status enquiries relating to that particular unit. The display shows the VU meter reading when the audio monitoring mode is selected. The audio can be monitored by headphone. The fault status of the unit is monitored and continuously reported to the network controller.

- The control inputs can be programmed for momentary or toggle operation. This selection can be made using the configuration software.

- Each control input has the ability to monitor the cable between the control inputs and the external switch for open-circuits and short-circuits.

- The CobraNet Interface is designed for redundant network cabling of both Praesideo and CobraNet.

- The unit is powered from the network controller via the network cable.

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System Overview
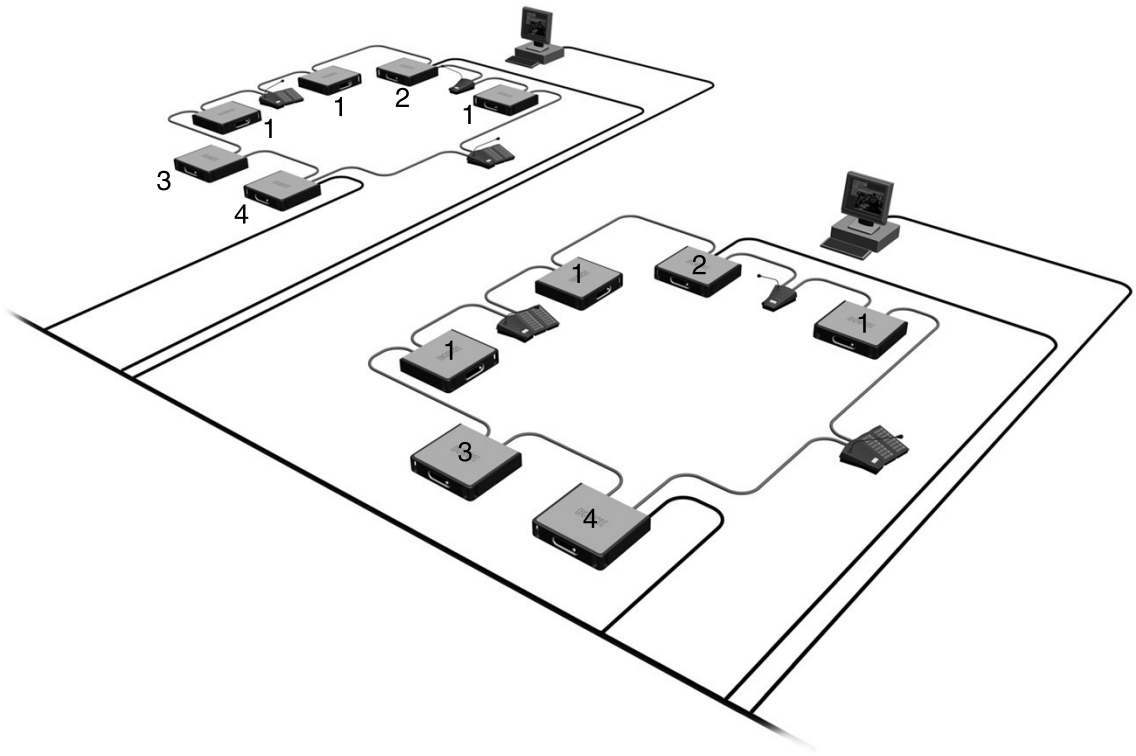
1 = Power amplifier

2 = Network controller
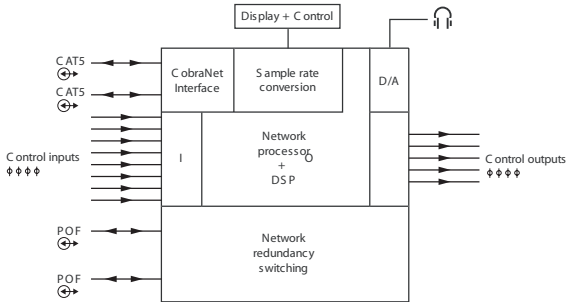
3 = Audio expander

4 = Cobranet Interface

Call station

Keypads

TCP/IP Network

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Installation/Configuration Notes

Interfaces

- 2 x system network connection
- 2 x CobraNet network connections

Indications and Controls

- 2 x 16 character LCD display for status display
- Rotary/push control for selection of system enquiry mode and volume of the headphone

Inputs

- 8 x control inputs

Outputs

- 5 x control outputs
- 1 x headphone output

Technical Specifications	
Power Consumption	
LBB 4404/00	11 W (dc)

Electrical	
Audio Transport	Ethernet
Channels	• 4 in / 4 out per interface
	• Max 64 on CobraNet
Compliance	IEEE 802.3
Audio Transport:	16-, 20-, and 24-bit
Sample Rate	48 kHz
Latency	5.33 ms
Integrity Assurance	Watchdog

Mechanical	
Mounting	Free-standing on a tabletop or mounted in a 19 inch rack
Dimensions (H x W x D)	• 88 x 483 x 400 mm (19 inch mounting, with brackets, without feet)
	• 92 x 440 x 400 mm (table top, without brackets, with feet)
Weight	7 kg
Color	Charcoal grey with silver

Environmental	
Emissions	According to EN55103-1 / FCC-47 part 15
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC
	• IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information
Model & Description
LBB 4404/00 CobraNet Interface

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LBB 442x/x0 Power Amplifiers

The main function of the power amplifier is the amplification of audio signals for the loudspeakers. Four types of power amplifiers are available:

- 1 x 500 W (LBB 4421/10)
- 2 x 250 W (LBB 4422/10)
- 4 x 125 W (LBB 4424/10),
- 8 x 60 W (LBB 4428/00).

It is possible to select output voltages of 100 V, 70 V or 50 V by changing jumpers.

The power amplifiers have a 2 x 16-character display for status display. The equipment can be used free-standing (tabletop) or in 19" rack mounting.

Features

- Automatic volume control
- Redundant network connection
- Power 'ON' indication (display)
- Audio processing for each amplifier channel
- Audio delay for each amplifier channel
- 2 x 16-character display for monitoring Headphone connection and VU meter for audio monitoring
- 8 control inputs and 1, 2, 4 or 8 control outputs
- 2 audio inputs (4 audio inputs for LBB 4428/00)
- 1, 2, 4 or 8 audio outputs (selection from 100 V/70 V/50 V outputs)
- Supervision of external cable connected to control inputs
- Amplifier monitoring and spare amplifier switching
- Loudspeaker line and loudspeaker supervision (LBB 4428/00 only line supervision)

Functions

- The power amplifiers receive input signals via the network.
- The power amplifiers also have 2 auxiliary audio inputs (4 for LBB 4428/00).
- The 8 x control inputs are freely programmable for system actions, and priorities can be assigned to these inputs.
- The control outputs are freely programmable for faults and calls.
- The 2 x 16-character display and rotary control on the front panel are used for address and version enquiry and monitoring functions. The display also shows the VU meter reading when the audio monitoring mode is selected. The audio can be monitored by using a headphone.
- The control input can be programmed for momentary or toggle operation. This selection can be made using the configuration software.
- Each control input has the ability to monitor the cable between the control input and the external switch for open-circuits and short-circuits.
- The power amplifier is designed for redundant network cabling. The network can be either single branch or redundant loop.
- The unit is monitored continuously and status changes are reported to the network controller for fault/status reporting.
- The power amplifier has a change-over facility for spare power amplifier switching. The change-over relays are included in the unit.
- The digital audio processing can handle 3 parametric equalisation sections and 2 shelving equalisation sections.
- The power amplifiers have a 48 V DC back-up supply input.

Certifications and Approvals

Safety	According to IEC60065-98 CE / FCC IEC60849
Immunity	According to EN55103-2

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Installation/Configuration Notes

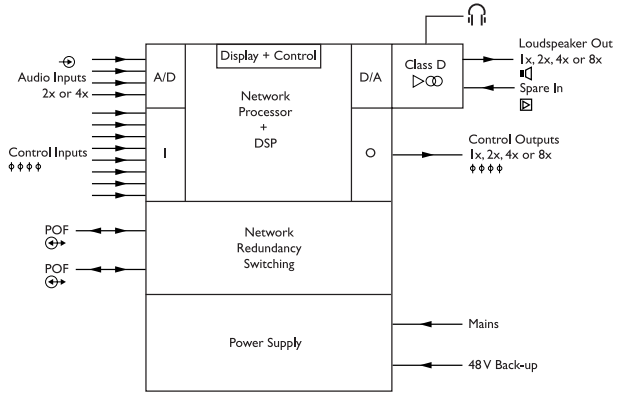### Rear View of LBB 4421/10 Power Amplifier 1 x 500 W

Rear View of LBB 4422/10 Power Amplifier 2 x 250 W

Rear View of LBB 4424/10 Power Amplifier 4 x 125 W

Rear View of LBB 4428/00 Power Amplifier 8 x 60 W

Interfaces

• 2 x system network connection

Indications and Controls

• 2 x 16-character LCD display for status display.

• Rotary/push control for selection of system enquiry mode and volume of the headphone or internal speaker.

• Power supply ON/OFF switch at rear.

Inputs

• 2x selectable line/microphone audio inputs for LBB 4421/10, LBB 4422/10 and LBB 4424/10

• 4x selectable line/microphone audio inputs for LBB 4428/00

Outputs

• Selectable 100 V, 70 V or 50 V outputs for each amplifier channel. An additional fixed 50 V output is provided.

• 1 x control output per amplifier channel

• 1 x headphone output

• 1 x spare switching per amplifier channel

Rear Connections

• 2 x system network connection

• 8 x programmable control inputs

• 1x, 2x, 4x or 8x 100 V/70 V/50 V audio outputs according to type of power amplifier

• 2x or 4x mic./line audio inputs according to type of power amplifier

• 1x, 2x, 4x or 8x programmable control outputs according to type of power amplifier

BOSCH

Technical Specifications
Audio Inputs

Analog Line Inputs

Socket Type	1 x 6 pole (2x 6 pole for LBB 4428/00) header for removable screw connector
Input Type	Mono, balanced
Frequency Response	-3 dB at 50 Hz and 20 kHz (tolerance ±1 dB)
Signal to Noise Ratio	> 87 dB (rms unweighted)
CMRR	> 40 dB at 1 kHz
Input Range	-6 dBV to 6 dBV
Input Impedance	22 kohm

Analog Microphone Inputs (only for ambient noise level sensing)

Socket Type	1 x 6 pole (2x 6 pole for LBB 4428/00) header for removable screw connector
Input Type	Mono, balanced
Frequency Response	-3 dB at 100 Hz and 16 kHz
Nominal Input Level	-57 dBV
Signal to Noise Ratio	> 62 dBA
CMRR	40 dB at 1kHz
Input Impedance	1360 ohm
Phantom Supply	12 V ±1 V @ 15 mA
Input Range	-65 dBV to -50 dBV

Audio Outputs

Socket Type	1 x 9 pole header for removable screw connector
Frequency Response	60 Hz (80Hz for LBB 4428/00) to 19 kHz (-3 dB)
Signal to Noise Ratio	> 85 dB with pilot tone off
Crosstalk between Ampifiers	<-80 dB at nominal load for 1 kHz
Total Harmonic Distortion	<0.3% (at 1 kHz) at 50% of rated output power

Power Consumption

Idle with Pilot Tone

LBB 4421/10	26 W (dc); 37 W (ac)
LBB 4422/10	29 W (dc); 44 W (ac)
LBB 4424/10	46 W (dc); 61 W (ac)
LBB 4428/00	64 W (dc); 80 W (ac)

Pmax -3 dB with Pilot Tone (=Alarm tone Level)

LBB 4421/10	330 W (dc); 370 W (ac)
LBB 4422/10	336 W (dc); 375 W (ac)
LBB 4424/10	340 W (dc); 390 W (ac)
LBB 4428/00	360 W (dc); 415 W (ac)

Mechanical

Mounting	Free-standing on a tabletop or mounted in a 19" rack
Dimensions (H x W x D)	• 88 x 483 x 400 mm (19"-mounting, with brackets, without feet) • 92 x 440 x 400 mm (table top, without brackets, with feet)

Weight

LBB 4421/10	13 kg
LBB 4422/10	14 kg
LBB 4424/10	16.5 kg
LBB 4428/00	14.5 kg
Color	Charcoal grey with silver

Environmental

Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC • IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information

Model & Description

LBB 4421/10 Power Amplifier 1 x 500 W
LBB 4422/10 Power Amplifier 2 x 250 W
LBB 4424/10 Power Amplifier 4 x 125 W
LBB 4428/00 Power Amplifier 8 x 60 W

BOSCH

LBB 4430/00 Call Station Basic

The call station basic is used to make manual or pre-recorded announcements to any pre-assigned zones or to executing pre-defined actions. The call station basic has a microphone on a flexible stem to transmit speech over the network, one push-to-talk button and a headset socket. When a headset is connected the microphone and speaker are muted.

Features

- Redundant network connection
- Power 'ON' indication
- Status/fault indications
- Differentiation in indications for higher- and lower-priority announcements
- Supervision of microphone capsule
- Stylish and modern design

Functions

- The call station basic has a limiter and a speech filter with a cutoff frequency at 340 Hz. This improves intelligibility and prevents clipping of the audio input on low-frequency signals.
- The call station basic can be connected to a maximum of 16 call station keypad units via a serial communication link.
- The power supply to the call station keypad units is provided from the call station.
- The call station basic has a volume control for the monitoring loudspeaker and headset.
- The call station basic can be programmed for momentary actions on make contact and toggle actions without repeat on make contact.
- Up to 256 priorities can be assigned.
- Analog to digital audio conversion is handled by the call station.
- The call station basic has a DSP which can be used for audio processing, including adjustment of sensitivity, limiter and parametric equalizer settings.
- The monitoring loudspeaker is switched on when the call station activates a chime or pre-recorded message.

Certifications and Approvals

Safety	According to IEC60065-98 CE / FCC IEC60849
Immunity	According to EN55103-2

BOSCH

Installation/Configuration Notes
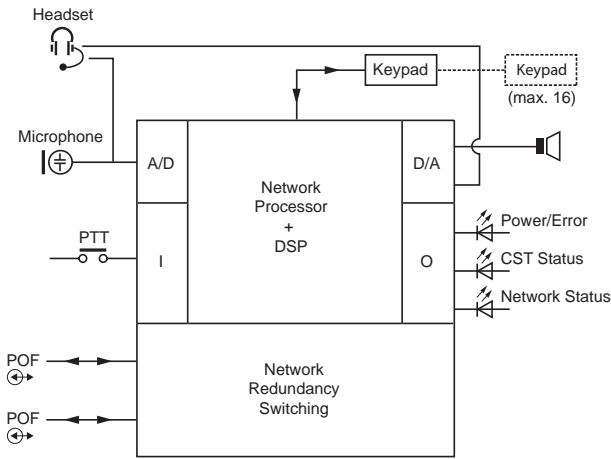
Interfaces

- 2 x system network connection
- Serial data and power supply interface for call station keypad units.
- Headset socket

Number of Connections	1
Positions	Front
Type	3.5 mm jack
Preferred Headset Type	Hosiden HBH 0058
Audio	Mono microphone and headset signals

Indications and Controls

The call station basic has:

- Volume control for loudspeaker/headset
- three 2-color LEDs which are used for the following indications:

LED1 power/error (left LED)	
Green On	Power on and no system/call station fault
Off	Power not available
Yellow Flashing	Fault in the system and power on
Yellow On	Call station error and power on

LED2 call station status (center LED)	
Green Flashing	Chime on or pre-recorded message playing
Green On	Ready to talk/live announcement
Off	No call status to display

LED3 system status (right LED)

Red On	An emergency announcement is being made in the system. Normal announcements can be made to the zones which are not involved (emergency announcements have priority over other announcements)
Yellow On	Lower-priority announcements are being made or are reserved (to all or some of the zones which are pre-assigned to the PTT key of the call station basic and selected zones of the call station keypad unit if fitted)
Yellow Flashing	Announcements with higher or the same priority (not emergency) are on or reserved (to all or some of the zones which are pre-assigned to the PTT key of the call station basic and selected zones of the call station keypad unit if fitted
Off	No pre-defined or selected zones are in use or reserved by the system, and no emergency announcement is being made

Technical Specifications
Power Consumption

LBB 4430/00	4.4 W (dc)

Audio Characteristics

Nominal acoustic input level	75 to 90 dB SPL
SNR	> 60 dB at 85 dB SPL
Frequency Response	340 Hz to 13.5 kHz (-3 dB)

Mechanical

Dimensions (H x W x D)	• 90 x 160 x 200 mm
Length of gooseneck:	380 mm
Weight	0.95 kg
Color	Charcoal grey

Environmental

Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC
	• IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information
Model & Description
LBB 4430/00 Call Station Basic

BOSCH

LBB 4432/00 Call Station Keypad

The call station keypad is used in combination with the call station basic to make manual or pre-recorded announcements to any assigned zones, to select the zones or to execute pre-defined actions. The call station keypad has 8 buttons.

Features

- Stylish and modern design
- 8 freely programmable selection keys
- Serial data interface to call station basic
- 16 call station keypads can be connected to one call station basic
- Differentiation in indications for higher- and lower-priority announcements

Functions

- The keys of the call station keypad can be programmed for the following actions:
    - control system functions: recall of selection, live announcement, cancel selection, BGM off, BGM volume control, programmable key for any action
    - select resources; BGM selection, pre-recorded message selection, attention and alarm tone selection.
    - zone selection, system control output selection
- Each key on the call station keypad has one 2-color LED.
- The call station keypad has input and output connections for serial data and power supply.
- The keys have a transparent button for placing the name of the action or zone assigned to that key.
- Safety covers for keys as option available.
- The power supply for the call station keypad is provided by the call station basic.
- The keys of the call station keypad can be programmed for momentary or toggle operation.

Certifications and Approvals

Safety	According to IEC60065-98 CE / FCC IEC60849
Immunity	According to EN55103-2

Installation/Configuration Notes

Interfaces

Serial data and power supply interface for call station keypads/call station basic

Indications and Controls

The call station keypad has one 2-color LED per key. These LEDs are used for the following indications:

INDICATION 1..8	
Yellow On	The selected resources are occupied by a lower-priority announcement
Yellow Flashing	The selected resources are occupied by an announcement with higher or equal priority
Green On	The selected resources are available or reserved for executing an action from that particular station
Key 1..8	
Not Pressed	Nothing is active, no LED indication. If a function is still active, then LED indication is still on
Pressed	Function(s) is (are) activated, LED indication switches on

BOSCH

Technical Specifications

Power Consumption

LBB 4432/00	1.1W (dc)

Mechanical

Mounting	• By fixing bracket to the call station basic
Dimensions (H x W x D)	70 x 95 x 200 mm
Weight	0.3 kg
Color	Charcoal grey

Environmental

Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC
	• IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information

Model & Description

LBB 4432/00 Call Station Keypad

BOSCH

LBB 4433/00 Call Station Kit

The call station kit is used to make custom-made call stations. These can be used to make manual or pre-recorded announcements to any pre-assigned zones or to execute pre-defined actions. The call station kit has two control inputs and a connector for microphone, headphone and volume control. When a headset is connected the microphone is muted. An external power supply can be connected to the call station kit.

Features

- Redundant network connection
- Power 'ON' outputs
- Status/fault outputs
- Monitoring loudspeaker output
- Separate indication outputs for higher- and lower-priority announcements
- Supervision of microphone

Functions

- The call station kit has a limiter and a speech filter with a cutoff frequency at 340 Hz. This improves intelligibility and prevents clipping of the audio input on low-frequency signals.
- The call station unit kit can be connected to a maximum of 16 call station keypads or keypad kits with serial data communication.
- The call station kit has a volume control input for both the monitoring loudspeaker and the headset.
- The call station kit control input can be programmed for momentary or toggle operation. The control inputs are monitored for short-circuits and open-circuits.
- Up to 256 priorities can be assigned.
- Analog to digital audio conversion is handled by the call station kit.
- The call station kit has a DSP which can be used for audio processing, including adjustment of sensitivity, limiter and parametric equalize settings.

Installation/Configuration Notes

Interfaces

- 2 x system network connection
- Serial data and power supply interface for call station keypad units
- Connector for microphone, headphone and volume control
- Backup supply input and 2 control inputs

Indications and Controls

- Volume control for loudspeaker/headset
- Connection for the control inputs
- Five LED outputs to which lamps or relays can be connected. These LEDs are used for the following indications:
  - Power on, no system/call station kit fault
  - Power not available
  - Fault in the system
  - Call station kit error
  - No error status
  - Chime on or pre-recorded message playing
  - Ready to talk/live announcement
  - No call status to display
- An emergency announcement is being made in the system
- Normal calls can be made to the zones which are not involved (emergency announcements have priority over other announcements)
- Lower-priority announcements are being made to all or some of the zones which are pre-assigned to the PTT key of the call station and selected zones of the call station extension unit if fitted)
- Announcements with higher or the same priority (not emergency) are being made (to all or some of the zones which are pre-assigned to the PTT key of the call station and selected zones of the call station extension unit, if fitted)
- No announcements are being made to the pre-defined zones (including emergency announcements)

Technical Specifications	
Power Consumption	
LBB 4433/00	7.2 W (dc) excl. indicators

Audio Characteristics	
Nominal acoustic input level	75 to 90 dB SPL
SNR	> 60 dB at 85 dB SPL
Frequency Response	340 Hz to 13.5 kHz (-3 dB)

Mechanical	
Mounting	• PCB with 6 mounting holes
Dimensions (H x W x D)	• 130 x 118 x 20 mm
Weight	120 g

Ordering Information	

Model & Description

LBB 4433/00 Call Station Kit

BOSCH

LBB 4434/00 Call Station Keypad Kit

The call station keypad kit is used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions. The call station keypad has 8 input connections with corresponding 16 output connections, all freely programmable.

Features

- 8 freely programmable logical inputs
- 16 freely programmable logical outputs
- Serial interface to call station kit
- 16 call station keypad kits can be connected to one call station kit/call station basic

Functions

- The keys of the call station keypad kit can be programmed for the following actions:
    - control system functions: recall of selection, live announcement, cancel selection, BGM off, BGM volume control, programmable key for any action
    - select resources; BGM selection, pre-recorded message selection, attention and alarm tone selection.
    - zone selection, system control output selection
- Each key of the call station keypad kit has two related contacts
- The call station keypad kit has input and output connections for the serial connection
- The power supply for the call station keypad kit can be provided by the call station
- The keys of the call station keypad kit can be programmed for momentary or toggle operation

Installation/Configuration Notes

Interfaces

Serial data and power supply connection for call station keypad units

Indications and Controls

- The call station keypad has 16 control outputs which can be programmed for any zone status, function status or faults
- The call station input can be programmed for all the functions specified for the call station keypad
- Call macros can be assigned to any of the inputs of the call station keypad kit
- Once the control input is used for any function, the control output will be linked to the specific action to be initiated by that input

Technical Specifications	
Power Consumption	
LBB 4434/00	1.2 W (dc) excl. indicators

Mechanical	
Mounting	• PCB with 6 mounting holes
Dimensions (H x W x D)	• 60 x 90 x 20 mm
Weight	55 g

Ordering Information
Model & Description
LBB 4434/00 Call Station Keypad Kit

BOSCH

LBB 4437/00 Call Station Interface

The LBB4437/00 is an interface between a single remote call station LBB4438/00 or remote call station kit LBB4439/00 and the fiber optical Praesideo network. It uses CAT-5 cable for the connection to a remote call station. The CAT-5 cable, carrying digital audio and control data, can be as long as 1 km. The length of the CAT-5 cable extends the span of a Praesideo network considerably.

The call station interface is powered by the Praesideo network, but a local power supply connection is also provided.

The remote call station interface is fully supervised and complies to IEC60849.

Features

- Connects remote call station to Praesideo network via CAT-5 cable (up to 1 km)
- Powered from Praesideo network and/or local power supply
- Two supervised control inputs
- Built-in DSP for audio processing functions
- Complete supervision
- IEC60849 compliant

Functions

- Supports a single LBB4438/00 remote call station or LBB4439/00 remote call station kit
- Allows for up to 1 km of CAT-5 cable to remote call station; the length of the CAT-5 cable comes on top of the maximum Praesideo system cable length
- Fully digital, high quality sound
- Supports fail safe mode of remote emergency call station
- Complete supervision of call station and connection
- Powered from Praesideo network and/or local power supply
- Two supervised control inputs

- Built-in DSP for audio processing of remote call station
- Configurable via Praesideo network controller (web browser interface)

Controls and indicators

- Two LED indicators on top for power and network status
- Two jumpers (below cover) to separate power supply of call station interface and remote call station

Interconnection

- Two Praesideo network connectors
- Modular jack connector for CAT-5 connection
- Power supply connector (lockable Kycon type)
- Removable Euro-style screw terminal connector for 2 control inputs

Technical Specifications	
Electrical	
Power consumption	5 W
External power supply	20 to 58 V (dc)
Control inputs	
Operation	Closing contact (with supervision)

Mechanical	
Mounting	By 2 screws in bracket
Dimensions (H x W x D)	240 x 82.5 x 28.9 mm
Weight	0.8 kg
Color	charcoal

Ordering Information
Model & Description
LBB 4437/00 Call Station Interface

BOSCH

www.boschsecurity.com

LBB 4438/00 Call Station Remote

The LBB4438/00 is a call station with the same functionality as the basic call station LBB4430/00, but it uses CAT-5 cable for its connection to the Praesideo network. It connects one-to-one to the call station interface LBB4437/00, which is part of the optical Praesideo network. The CAT-5 cable, carrying digital audio and control data, can be as long as 1 km. The length of the CAT-5 cable extends the span of a Praesideo network considerably.

The LBB4438/00 can be extended with up to 16 keypads LBB4432/00 or LBB4434/00, each offering 8 configurable keys.

The remote call station is powered by the call station interface via the CAT-5 cable, but a local power supply connection is also provided for long distance use with many keypads.

The remote call station is fully supervised and complies to IEC60849. Even in case the Praesideo network controller would fail, the remote call station is still able to do emergency calls (fail safe).

Features

- Connects to call station interface via CAT-5 cable
- Up to 1 km from Praesideo network
- Uses standard Praesideo keypads for extension
- Built-in limiter
- Powered via CAT-5 and/or local power supply
- Complete supervision
- IEC60849 compliant

Functions

- Cardioid supervised microphone on goose neck for good speech intelligibility
- Configurable press-to-talk key for easy operation

- Easy interfacing using CAT-5 cable
- Can be positioned up to 1 km from Praesideo network; the length of the CAT-5 cable comes on top of the maximum Praesideo system cable length
- Can be extended with up to 16 keypads
- Up to 256 priority levels
- Monitoring loudspeaker with headphone/headset connection and volume control
- Fully digital, high quality sound
- Supports fail safe mode
- Complete supervision of call station and connection
- Powered from Praesideo call station interface and/or local power supply
- Configurable via Praesideo network controller (web browser interface)

Controls and indicators

- Three bi-color LED indicators on top for power, system status and call status
- Configurable press-to-talk key
- Monitor volume control

Interconnection

- Modular jack connector for CAT-5 connection
- Power supply connector (lockable Kycon type)
- Jack 3.5mm for headset/headphone

Technical Specifications	
Electrical	
Power consumption	4 W without keypads
External power supply	20 to 58 V (dc)
Performance	
Frequency response	340 Hz – 14 kHz (-3 dB)
Nominal input level	75 to 90 dBSPL
Total harmonic distortion	< 0.5 % (1 kHz)
Signal–to-noise ratio	> 60 dB at 85 dBSPL
Headset	
Mic input sensitivity	-44 to -59 dBV (configurable)
Headpones impedance	32 Ohm typical

Mechanical	
Mounting	Free-standing
Dimensions (H x W x D)	90 x 160 x 200 mm
Length of goose neck	380 mm
Weight	1 kg
Color	charcoal

Ordering Information
Model & Description
LBB 4438/00 Call Station Remote

BOSCH

LBB 4410/00 Network Splitter

The network splitter is used in a network to tap off two branches from the main cable run. The unit can be connected to an external DC power supply or it can use the power supply from the network controller. The unit is automatically powered from the local power supply if connected. The maximum power feed to tap-off outlets can be reduced.

The network splitter can also be used as a repeater to extend the cable length with another 50 meters of plastic fiber.

Features

- Redundant network connection
- Power 'ON' indication
- Error indication
- Possibility to connect a local power supply

Functions

- The network splitter has 2 LEDs for diagnostic purposes.
- The maximum current is selectable.
- The external power from the local supply is not fed back to the main system cable.
- The local power supply is 48 V DC.

Certifications and Approvals

Safety	According to IEC60065-98
	CE / FCC
	IEC60849
Immunity	According to EN55103-2

Installation/Configuration Notes

Interfaces

- 2 x system network connection for main run
- 2 x system network connection for tap off

Indications and Controls

2 LEDs for status indications

Green	Yellow	Indicates
Off	Off	No power
On	Off	Functioning correctly
Off	On	No network or network fault

- One jumper to select if power to the branches is switched off when power is removed from the main branch
- One jumper to select whether external power is used
- One jumper to select current limit to tap off outputs

Technical Specifications	
Power Consumption	
LBB 4410/00	3.9 W (dc)

Mechanical	
Mounting	By 2 screws in bracket
Dimensions (H x W x D)	• 200 x 82.5 x 28.9 mm
Weight	0.3 kg
Color	Charcoal grey

Environmental	
Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC
	• IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information

Model & Description

LBB 4410/00 Network Splitter

LBB 4414/00 Fiber Interface

The fiber interface is used in a network to convert from glass fiber optic cable to plastic fiber optic cable and vice versa. This unit supports the redundant wiring topology. The unit can be provided with an external DC supply or it can use the supply from the network controller. The unit is automatically powered from the local supply if connected. The fiber interface has 2 LEDs for diagnostic purposes (see the table).

The local power supply is 48 V DC.

Features

- Redundant network connection
- Power 'ON' indication
- 2 supervised control inputs
- Error indication
- Possibility to connect a local power supply

Certifications and Approvals

Safety	According to IEC60065-98 CE / FCC IEC60849
Immunity	According to EN55103-2

Installation/Configuration Notes

Interfaces

- 1 x system network connection for plastic optical fiber
- 1 x system network connection for glass optical fiber

Indications and Controls

2 LEDs (yellow and green) for status indications. Indications are as below:

Green	Yellow	Indicates
Off	Off	Off; no external power available
Off	On	Standby; external power to POF switched off
On	On	Operating; external power to POF switched on
On	Off	Operating; no external power available but powered from the POF side
Flash	Off	Fault; no external power available and no protocol received
Flash	On	Fault; external power available but no protocol received

Inputs

- 2 x control inputs

Technical Specifications	
Power Consumption	
LBB 4414/00	4.6 W (dc)

Mechanical	
Mounting	By 2 screws in bracket
Dimensions (H x W x D)	• 200 x 82.5 x 28.9 mm
Weight	0.3 kg
Color	Charcoal grey

Environmental	
Emissions	According to EN55103-1 / FCC-47 part 15B
Immunity	According to EN55103-2
Safety	According to IEC60065-98
Approvals	• CE / FCC
	• IEC60849
Temperature	-5°C to +55°C
Humidity	15% to 90%

Ordering Information
Model & Description
LBB 4414/00 Fiber Interface

BOSCH

LBB 4416/xx Network Cables

Installation/Configuration Notes

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).

Technical Specifications	
Black PVC Cable	7 mm (dia)

Ordering Information
Model & Description
LBB 4416/00 Network Cable 100 m
LBB 4416/01 Network Cable Assembly 0,5 m
LBB 4416/02 Network Cable Assembly 2 m
LBB 4416/05 Network Cable Assembly 5 m
LBB 4416/10 Network Cable Assembly 10 m
LBB 4416/20 Network Cable Assembly 20 m
LBB 4416/50 Network Cable Assembly 50 m
Hardware Accessories
LBB 4419/00 Cable Couplers (10 pcs)

LBB 4417/00 Set 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.

Ordering Information
Model & Description
LBB 4417/00 Set Network Connectors

LBB 4418/00 Cable Connector Tool Kit

Parts Included

Quantity	Component
1	Standard cutting pliers
1	Stripping pliers
1	Crimping pliers
1	POF cutting/stripping tool
1	POF positioning and indent tool
1	Torx screw driver
1	Spare cutting system

Ordering Information
Model & Description
LBB 4418/00 Cable Connector Tool Kit
LBB 4418/50 Spare cutting system

BOSCH

www.boschsecurity.com

LBB 4419/00 Cable Couplers (10pcs)

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

Parts Included

Quantity	Component
20	pieces

Ordering Information

Model & Description

LBB 4419/00 Cable Couplers (10 pcs)

LBB 4436/00 Button Cover

Ordering Information

Model & Description

LBB 4436/00 Button Cover

BOSCH

LBB 4440/00 Supervision Control Board
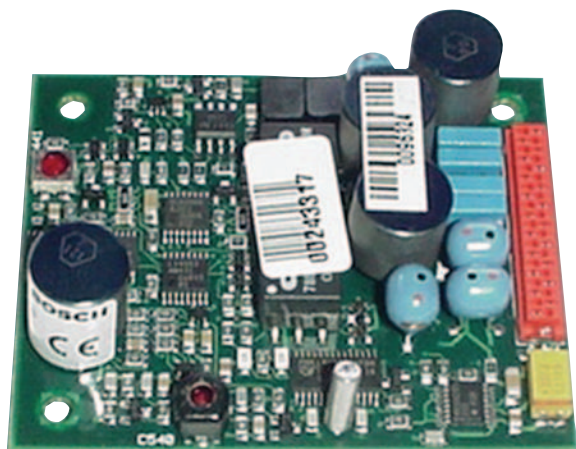
The LBB 4440/00 Supervision Control Board controls the communication between Praesideo and the loudspeaker or loudspeaker line supervision boards.

The LBB 4440/00 functions as the supervision-master board, monitoring multiple supervision-slave boards (LBB 4441/00 and LBB 4443/00) which are mounted inside the loudspeakers on the line. With these boards working in conjunction it is possible to supervise up to 80 loudspeakers, or 64 loudspeakers and 16 loudspeaker lines on a 500 Watt amplifier.

Communication between the supervision boards takes place inaudibly over the loudspeaker line, therefore no additional wiring is required. Communication is not affected by the audio signals on the loudspeaker lines. Faults in the loudspeakers are reported within 300 seconds and faults in the loudspeaker lines are reported within 100 seconds.

Features

- Multiple loudspeaker and loudspeaker line monitoring without additional cabling
- Mounted inside the power amplifier
- Controls up to 80 loudspeaker and loudspeaker line supervision boards
- Open-circuit fault detection
- Compatible with 100 V and 70 V loudspeaker lines

Functions

- Monitoring can be switched on/off from the configuration software
- Continuous monitoring of the presence of supervisor boards
- Loudspeaker faults are detected and reported within 300 s, loudspeaker line faults are detected and reported within 100 s

Certifications and Approvals

Electromagnetic Compatibility	
Emission	EN55103-1/FCC-47part 15B
Immunity	EN55103-2

Installation/Configuration Notes

The following power amplifiers have a provision for installing a supervision control board:

- LBB 4421/10
- LBB 4422/10
- LBB 4424/10

Required Loudspeaker Line Characteristics

Preferred cable	Single twisted pair, 0.75 mm^2 to 1.5 mm^2
Maximum cable length	1 km (including branches, max. 300 m adjacent to other supervised loudspeaker cables)
Maximum cable loop resistance	38 Ohm
Maximum cable inductance	750 µH
Minimum total loudspeaker impedance	120 Ohm @ 70 kHz (independent of amplifier power)
Maximum cable capacity	300 nF. However, if the maximum load capacity for the power amplifier output is less than this value, the maximum load capacity of the power amplifier is leading (see section 8.7).
Maximum number of supervision boards per amplifier channel	80 @ 500 W 40 @ 250 W 20 @ 125 W
Loudspeaker voltage	70 V, 100 V

Note: The use of multi-wire cables is not recommended in combination with line supervision because crosstalk between audio channels may influence the line supervision.

Technical Specifications

Mechanical

Mounting

Mounting Options	Internally mounted in Power Amplifier. Plastic brackets for horizontal and vertical installation included

Dimensions (H x W x D)

Excluding mounting bracket	60 x 50 x 17 mm (2.4 x 2.0 x 0.7 inch)

Weight

Excluding mounting bracket	30g (1 ounce)

Interconnections

1x	20 pole connector and flat cable

Environmental

Temperature

Operating	-5 to 55 °C (23 to 131 °F)
Non-operating	-20 to 70 °C (-4 to 158 °F)

Relative Humidity

Operating	15 to 90%, non-condensing
Non-operating	5 to 95%, non-condensing
Air Pressure	600 to 1100 hPa
MTBF	50,000 hours at +55 °C (131 °F) (The MTBF doubles for every 10 °C (18 °F) decrease in temperature).

Ordering Information

Model & Description

LBB 4440/00 Supervision Control Board
   for use in the power amplifier on each amplifier channel

BOSCH

LBB 4441/00 Loudspeaker Supervision Board
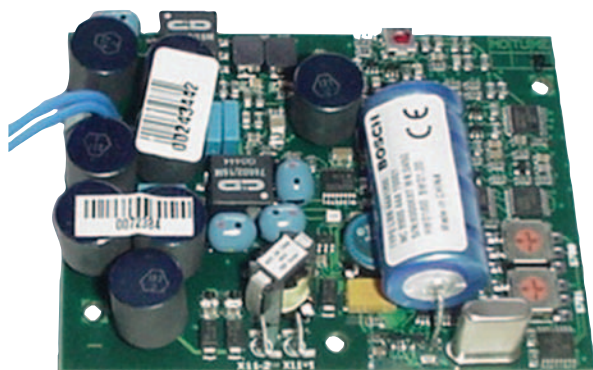
The LBB 4441/00 Loudspeaker Supervision Board checks if loudspeakers are intact and functioning.

The LBB 4441/00 is mounted inside the loudspeaker casing and communicates the status of the loudspeaker to the LBB 4440/00 Supervision Control Board via the existing loudspeaker cable.

Features

- Loudspeaker and loudspeaker line monitoring without additional cabling
- Open-circuit fault detection
- Compatible with 100 V and 70 V loudspeaker lines
- Powering of the supervision-board from the power amplifier
- Communication is not affected by the audio signals on the loudspeaker line

Functions

- Loudspeaker faults are detected and reported within 300 s, loud speaker line faults are detected and reported within 100 s.

Certifications and Approvals

Electromagnetic Compatibility	
Emission	EN55103-1/FCC-47part 15B
Immunity	EN55103-2

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

- LBC 3011/41
- LBC 3011/51
- LBC 3018/00
- LBC 3210/00
- LBC 3403/14 with LBN 9000/00 or LBN 9001/00
- LBC 3404/14 with LBN 9000/00 or LBN 9001/00
- LBC 3405/14 with LBN 9000/00 or LBN 9001/00
- LBC 3406/14 with LBN 9000/00 or LBN 9001/00
- LBC 3432/01
- LBC 3482/00, LBC 3483/00
- LBC 3510/00, LBC 3510/40
- LBC 3520/00, LBC 3520/40
- LBC 3530/00, LBC 3530/40

Note: The board must be connected after the ceramic terminal block with the thermal fuse. In case of a fire, the thermal fuse will blow and disconnect the board from the loudspeaker line. The trip point of the thermal fuse that is connected to the ceramic block is lower than the melting point of the solder on the board to prevent short-circuits in the supervision board and the loudspeaker line.

Note: When the loudspeaker does not contain a ceramic terminal block with a thermal fuse, use an LBC 1256/00 EVAC Connection Adapter

BOSCH

Technical Specifications

Mechanical

Mounting

Mounting Options	Internally mounted in the Loudspeaker. An optional mounting bracket, LBB 4446/00 is available.

Dimensions (H x W x D)

Board only	78 x 60 x 22 mm (3.0 x 2.3 x 0.8 inch)

Weight

Board only	70g (2.4 ounces)

Interconnections

2x	30 cm flying leads
2x	faston connectors

Environmental

Temperature

Operating, guaranteed	-5 to 55 °C (23 to 131 °F)
Operating, sample tested	-15 to 55 °C (5 to 131 °F)
Non-operating	-20 to 70 °C (-4 to 158 °F)

Relative Humidity

Operating	15 to 90%, non-condensing
Non-operating	5 to 95%, non-condensing
Air Pressure	600 to 1100 hPa
MTBF	50,000 hours at +55 °C (131 °F) (The MTBF doubles for every 10 °C (18 °F) decrease in temperature).

Ordering Information

Model & Description

LBB 4441/00 Loudspeaker Supervision Board

LBB 4446/00 Brackets (10 pcs)

BOSCH

LBB 4442/00 Line Supervision Set
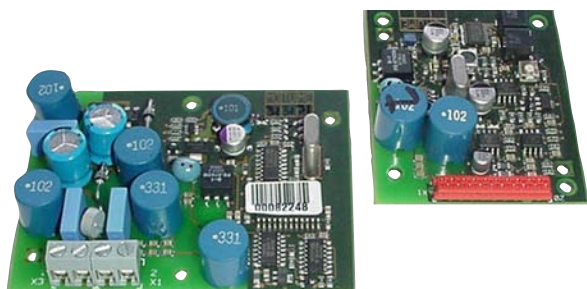
The Praesideo system uses a unique loudspeaker line monitoring principle, which requires no additional cable. The loudspeaker line itself is used to communicate with the supervision-slave installed at the end of the loudspeaker line.

The LBB 4442/00 contains the master and slave device for supervision of a single loudspeaker line. For supervision of multiple loudspeaker line branches and loudspeakers, the use of the LBB 4440/00 Supervision Control Board in conjunction with the LBB 4441/00 and LBB 4443/00 Supervision Boards is recommended.

Features

- Loudspeaker line monitoring without additional cabling
- Supervision-master mounting in the power amplifier
- Supervision-slave mounting at the end of the loudspeaker line
- Open-circuit fault detection
- Compatible with 100 V and 70 V loudspeaker lines
- Powering of the supervision-slave from the power amplifier

Functions

- The supervision master is mounted inside the power amplifier unit and the transceiver-slave is mounted at the end of the line.
- The short-to-ground and short-circuit detection for the loudspeaker lines are incorporated in the power amplifier.
- The pilot tone generator for loudspeaker monitoring is incorporated in the power amplifier.
- Loudspeaker line monitoring can be switched on/off from the configuration software.
- Continuous monitoring of the presence of a transceiver-slave.
- The power for the line supervision set is provided by the power amplifier.
- The supervision-slave board fits into the Bosch range of loudspeakers.

Certifications and Approvals

Electromagnetic Compatibility	
Emission	EN55103-1/FCC-47part 15B
Immunity	EN55103-2

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

- LBC 3011/41
- LBC 3011/51
- LBC 3018/00
- LBC 3210/00
- LBC 3403/14 with LBN 9000/00 or LBN 9001/00
- LBC 3404/14 with LBN 9000/00 or LBN 9001/00
- LBC 3405/14 with LBN 9000/00 or LBN 9001/00
- LBC 3406/14 with LBN 9000/00 or LBN 9001/00
- LBC 3432/01
- LBC 3482/00, LBC 3483/00
- LBC 3510/00, LBC 3510/40
- LBC 3520/00, LBC 3520/40
- LBC 3530/00, LBC 3530/40

Technical Specifications	
Mechanical	
Slave	
Mounting	By 2 screws
Dimensions (H xW X D)	80 x 60 x 16 mm (3.1 x 2.3 x 0.6 inch)
Weight	50 g (1.7 ounces)
Master	
Mounting	Fits in all Praesideo Power Amplifiers
Interconnections	
2x screw terminal connectors	

Environmental	
Temperature	
Operating, guaranteed	-5 to 55 °C (23 to 131 °F)
Operating, sample tested	-15 to 55 °C (5 to 131 °F)
Non-operating	-20 to 70 °C (-4 to 158 °F)
Relative Humidity	
Operating	15 to 90%, non-condensing
Non-operating	5 to 95%, non-condensing
Air Pressure	600 to 1100 hPa
MTBF	50,000 hours at +55 °C (131 °F) (The MTBF doubles for every 10 °C (18 °F) decrease in temperature).

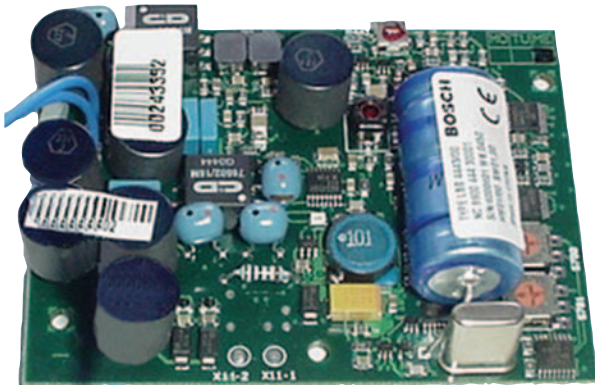| Ordering Information |
|---|
| **Model & Description** |
| LBB 4442/00 Line Supervision Set |
| LBB 4446/00 Brackets (10 pcs) |

BOSCH

LBB 4443/00 End of Line (EOL) Supervision Board

The LBB 4443/00 EOL Supervision Board checks if the loudspeaker line is intact and functioning.

The LBB 4443/00 is mounted inside the casing of the last loudspeaker on the loudspeaker line, or inside a separate casing. In the case of a loudspeaker line with multiple branches a separate LBB 4443/00 is required for the last loudspeaker in each branch.

The LBB 4443/00 boards work in conjunction with the LBB 4440/00 Supervision Control Board to monitor the status of the loudspeaker line and all of its branches. The line status is communicated to the LBB 4440/00 via the existing loudspeaker cable.

Features

- Loudspeaker line monitoring without additional cabling
- Open-circuit fault detection
- Compatible with 100 V and 70 V loudspeaker lines
- Powering of the supervision-board from the power amplifier
- Communication is not affected by the audio signals on the loudspeaker line

Functions

- Supervision of multiple branches of a line possible
- Loudspeaker line faults are detected and reported within 100 s.

Certifications and Approvals

Electromagnetic Compatibility	
Emission	EN55103-1/FCC-47part 15B
Immunity	EN55103-2

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

- LBC 3011/41
- LBC 3011/51
- LBC 3018/00
- LBC 3210/00
- LBC 3403/14 with LBN 9000/00 or LBN 9001/00
- LBC 3404/14 with LBN 9000/00 or LBN 9001/00
- LBC 3405/14 with LBN 9000/00 or LBN 9001/00
- LBC 3406/14 with LBN 9000/00 or LBN 9001/00
- LBC 3432/01
- LBC 3482/00, LBC 3483/00
- LBC 3510/00, LBC 3510/40
- LBC 3520/00, LBC 3520/40
- LBC 3530/00, LBC 3530/40

Technical Specifications	
Mechanical	
Mounting	
Mounting Options	Internally mounted in the Loudspeaker. An optional mounting bracket, LBB 4446/00 is available.
Dimensions (H x W x D)	
Board only	78 x 60 x 22 mm (3.0 x 2.3 x 0.8 inch)
Weight	
Board only	70g (2.4 ounces)
Interconnections	
2x	screw terminal connectors

Environmental	
Temperature	
Operating, guaranteed	-5 to 55 °C (23 to 131 °F)
Operating, sample tested	-15 to 55 °C (5 to 131 °F)
Non-operating	-20 to 70 °C (-4 to 158 °F)
Relative Humidity	
Operating	15 to 90%, non-condensing
Non-operating	5 to 95%, non-condensing
Air Pressure	600 to 1100 hPa
MTBF	50,000 hours at +55 °C (131 °F) (The MTBF doubles for every 10 °C (18 °F) decrease in temperature).

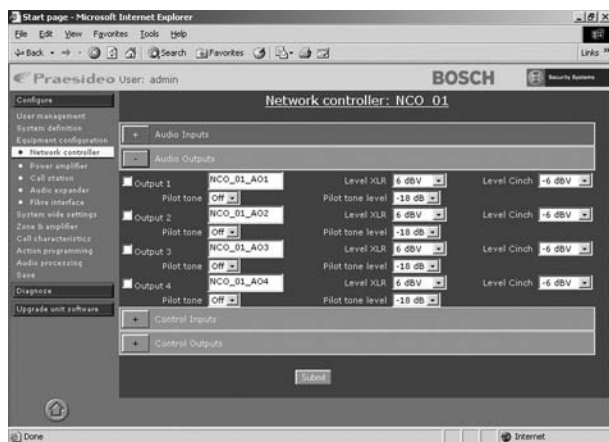| Ordering Information |
|---|
| **Model & Description** |
| LBB 4443/00 End of Line (EOL) Supervision Board |
| LBB 4446/00 Brackets (10 pcs) |

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LBB 4470/00 Configuration, Diagnostic and Logging Software

This software has 3 parts.

1. Configuration software, which is installed in the network controller.

2. Diagnostic & logging software, which is installed in the network controller, and optionally on a logging PC.

3. File transfer software, which is to be installed on the configuration PC and supplied together with the network controller.

Features

Configuration Software

- Web-based user interface
- Can be accessed using a PC with Internet Explorer 6 or higher
- Different levels of access rights can be assigned
- All the system parameters can be configured
- User-friendly navigation
- Dynamic HTML pages

Diagnostic and Logging Software

- Logging of call events, fault events and general events
- On-line logging function
- Historical logging
- Password-protected

File Transfer Software

- PC application
- Supplied together with the network controller
- Creation of message sets
- Off-line configuration

System Overview

Configuration Software

The configuration software is required for every system. Once the configuration has been completed with data entry and downloaded to the network controller, the system can operate without the configuration PC. The configuration software is required only during installation and when changes are made to the existing system configuration.

The configuration software is designed to allow even first-time users to navigate easily through the configuration.

Diagnostic and Logging Software

The main function of the diagnostic & logging software is to monitor and record the status of all elements of the PA system. This software handles logging of all events like calls and status change of system elements, and gives a current view of the status of the system. This software section can be used for real-time logging by connecting a PC to the network controller, via TCP/IP.

File Transfer Software

The main purpose of the file transfer software is to transfer both data and audio files from the PC to the network controller.

Functions

Configuration Software

- Configurations of system access rights have three access levels, each with different rights:
    - administrator
    - installer
    - user
- Configuration of call macro. Call macro is the function which allows the user to program different functions and/or actions that can be assigned to inputs like control input, call station or audio input. A single call macro can be assigned to multiple inputs. The call macro defines:
    - start chime
    - audio input
    - message(s) – sequence of messages, number of repetitions, duration, interval, end chime
    - scheduling
- Zone grouping allows the user to group zones covering the same type of areas.
- In the zone configuration, zone-related items like amplifier channel outputs, audio outputs and control outputs can be grouped.
- A power amplifier can be linked to a spare power amplifier so that if there is a fault in the power amplifier it will automatically change over to the spare power amplifier.
- The ratio of main power amplifiers to spare power amplifiers is flexible, and can be configured to meet specific application requirements.
- The configuration of all equipment inputs and outputs can be carried out using the configuration software.
- All audio inputs and outputs have audio processing facilities, including parametric equalization with high- and low-pass

BOSCH

filters for inputs and outputs, and gain and limiter adjustments for inputs only.

- The audio inputs can be selected between microphone and line.
- The delay can be configured for each amplifier output individually.
- The level of the 20 kHz signal can be automatically adjusted.
- The call station keypad can be programmed for different functions
- The call station can be defined as an emergency call station with the possibility to add zones or audio outputs during an announcement.
- A control input can be configured for a sequence of functions.
- The call station basic/call station keypad/call kit/call station keypad kit can be programmed for the functions mentioned in their respective sections in the configuration software.
- The control input can be configured for monitoring of cables connected to it for open-circuit and short-circuit.
- The zone can be configured for two time-based volume settings.
- The BGM sources can be assigned to music channels which can be configured for different zones/audio outputs.

Diagnostic and Logging Software

- Modes of enquiry:
  - general events
  - call logging
  - fault logging
- This part of the software allows monitoring of the following functions:
  - monitoring of the fault status of all equipment
  - any status changes in the system
- View historical log stored in the network controller.
- View logged events of monitored external devices.
- Control audible and visual fault indicators.
- Remote logging and diagnostic.
- The control input can be used for reporting the fault status of third-party equipment, which is not part of the Praesideo system.
- Individual equipment status.
- The alarm can be acknowledged and reset. The acknowledgement and reset actions are logged.
- View the last 200 fault messages, which are stored in the network controller.

File Transfer Software

- User ID and password-protected access.
- The message set (a set with multiple wav files), which has to be stored in the network controller, can be assembled, stored on the PC and sent to the network controller.
- A configuration file, which has been created in off-line mode, can be transferred to the network controller.
- The configuration file can be retrieved from the network controller.

Ordering Information

Model & Description

LBB 4470/00 Configuration, Diagnostic and Logging Software

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Praesideo - Configuration Examples

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Praesideo - Configuration Examples

Five examples are described in this section. Each provides a short specification of the requirements, the bill of materials required to meet them, a schematic diagram of the resulting system and a short system description. The bill of materials is restricted to the Praesideo system units needed to meet the specified requirements. Connecting accessories such as cables/connectors, as well as third-party equipment, are not included in the bills of materials.

The Praesideo system can be configured to meet any set of requirements, even for complex system functions. The five examples in this section demonstrate the versatility of the system, ranging from small applications to extensive and complex installations. The numbers of inputs, outputs and functions can vary greatly between systems. The basic principles of the system configuration remains the same in all the examples. The modular construction of the system units, which integrate different functions, provides the user with a system that is easily expandable without changing the basic system and at modest additional cost. Even the extra functions can be implemented by adding units without changes to the existing system.

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Configuration Example 1

System Requirements

- 12 zones
  - 6 zones with 60 W
  - 4 zones with 250 W
  - 2 zones with 500 W
- 4 call stations (for 12 selections)
  - First call station at 40 meters from the network controller, installed in an equipment room
  - Second call station at 300 meters from the first call station
  - Third call station at 200 meters from the second call station
  - Fourth call station at 25 meters from the third call station.
- 1 call microphone
- 3 music source inputs
- 2 local audio inputs for zones 1 and 2
- Interface with fire alarm system – 12 control inputs needed
- Spare power amplifiers
- Both amplifier and loudspeaker line supervision
- Diagnostic software to display information on a PC

Bill of Materials

Legend

Quantity	Unit Name	
1	LBB 4401/00	Network Controller
6	LBB 4414/00	Fiber Interface
3	LBB 4421/10	Power Amplifier 1 x 500 W
3	LBB 4422/10	Power Amplifier 2 x 250 W
2	LBB 4428/00	Power Amplifier 8 x 60 W
4	LBB 4430/00	Call Station Basic
8	LBB 4432/00	Call Station Keypad
21	LBB 4442/00	Line Supervision Set
1	LBB 4470/00	Configuration, Diagnostic and Logging Software

1 = 1 x 500 W Power Amplifier
2 = 2 x 250 W Power Amplifier
3 = 8 x 60 W Power Amplifier
4 = Network Controller

Call Station

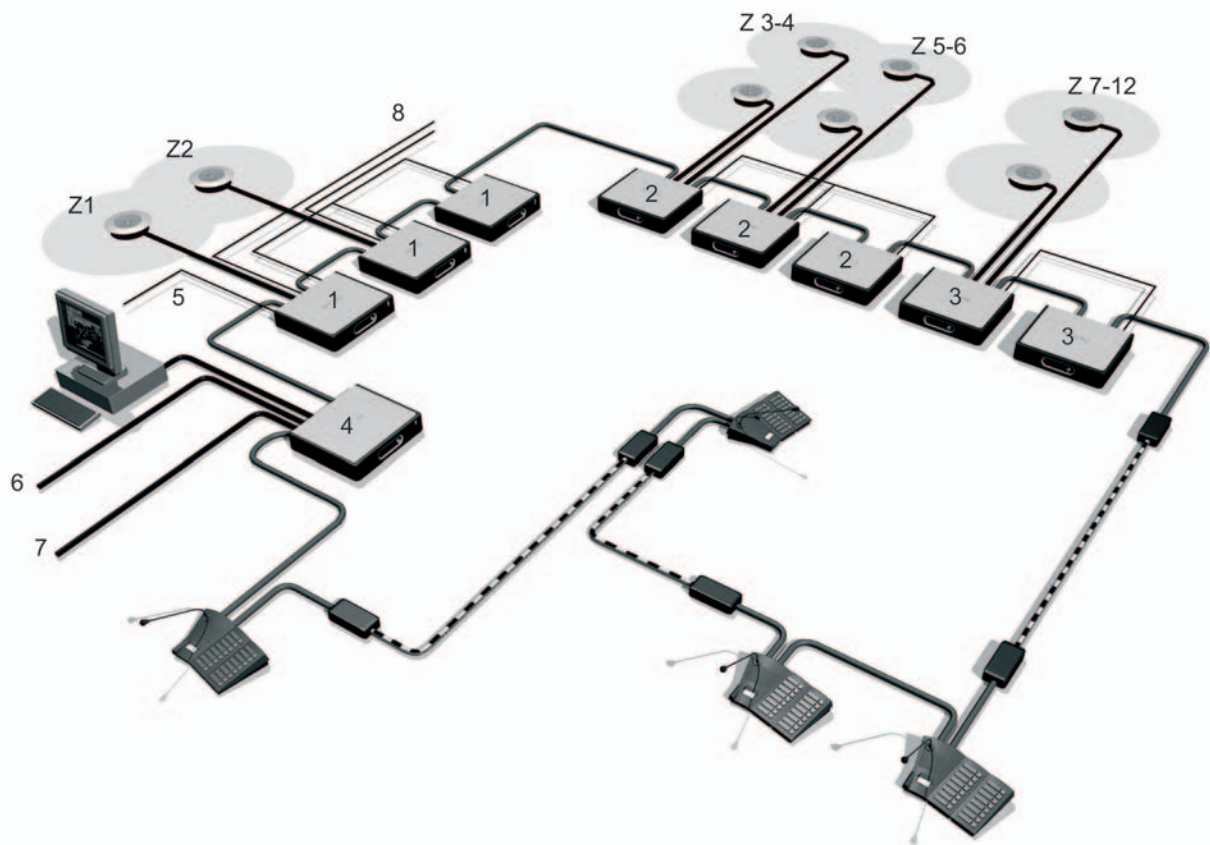Keypads

Loudspeaker Zone

Fiber Interface with Power Supply

Glas Optical Fiber

Plastic Optical Fiber

5 To fire Detection System
6 Call Microphone
7 Background Music
8 local Audio

System Overview

The above system has 12 PA zones and 4 call stations. All call stations are standard call stations. As all power amplifiers require a spare amplifier, the power amplifier quantities include the spare. For each type of power amplifier, the same type of power amplifier has to be included as spare.

The zones have different power requirements, which are met by the flexibility of the Praesideo system. In this case, 3 types of power amplifiers are used. Amplifier monitoring and change-over are incorporated in the amplifier itself. Loudspeaker line monitoring can be incorporated in the power amplifier by inserting the supervision master card in the power amplifier and installing the supervision slave card at the end of the loudspeaker line. These cards also have to be installed in the spare amplifiers, as the loudspeaker lines will still need to be monitored if the power amplifier is changed over to the spare unit.

All the call stations in this example are constructed using call station basic units and call station extension keypads.

Two zones are provided with local audio inputs. These inputs can be connected to the audio inputs of the corresponding power amplifiers, and can be given a lower priority than any announcements. In this case the audio input of the power amplifier will be overridden if there is an announcement with a higher priority.

The network controller has 4 audio inputs. Three of these are used for BGM sources, and one is used for the call microphone. The switch of the call microphone is connected to one of the control inputs of the network controller. This control input can be configured to route the call microphone to pre-defined zones.

The configuration software is used to configure the system, and the diagnostic and logging software allows monitoring of the various system units and display of status changes on the PC.

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Configuration Example 2

- 12 zones
    - 6 zones with 250 W
    - 2 zones with 500 W
    - 4 zones with 1500 W
- 3 call stations (for 12 selections)
    - First call station at 100 meters from the network controller, installed in an equipment room
    - Second call station at 40 meters from the first call station
    - Third call station at 600 meters from the second call station
- 2 music sources
- 1 call microphone
- 5 local audio inputs for zones 5, 6, 7, 8 and 9
- AVC for 1500 watt zones and 500 watt zones
- Interface with fire alarm system – 8 control inputs needed
- Spare power amplifiers
- Both amplifier and loudspeaker line supervision

Bill of Materials

Quantity	Unit Name	
1	LBB 4401/00	Network Controller
6	LBB 4414/00	Fiber Interface
16	LBB 4421/10	Power Amplifier 1 x 500 W
4	LBB 4422/10	Power Amplifier 2 x 250 W
3	LBB 4430/00	Call Station Basic
6	LBB 4432/00	Call Station Keypad
24	LBB 4442/00	Line Supervision Set
1	LBB 4470/00	Configuration, Diagnostic and Logging Software

System Overview

Legend

1 = 1 x 500 W Power Amplifier
2 = 2 x 250 W Power Amplifier
3 = Network Controller

Call Station

Keypads

Loudspeaker Zone

Fiber Interface with Power Supply

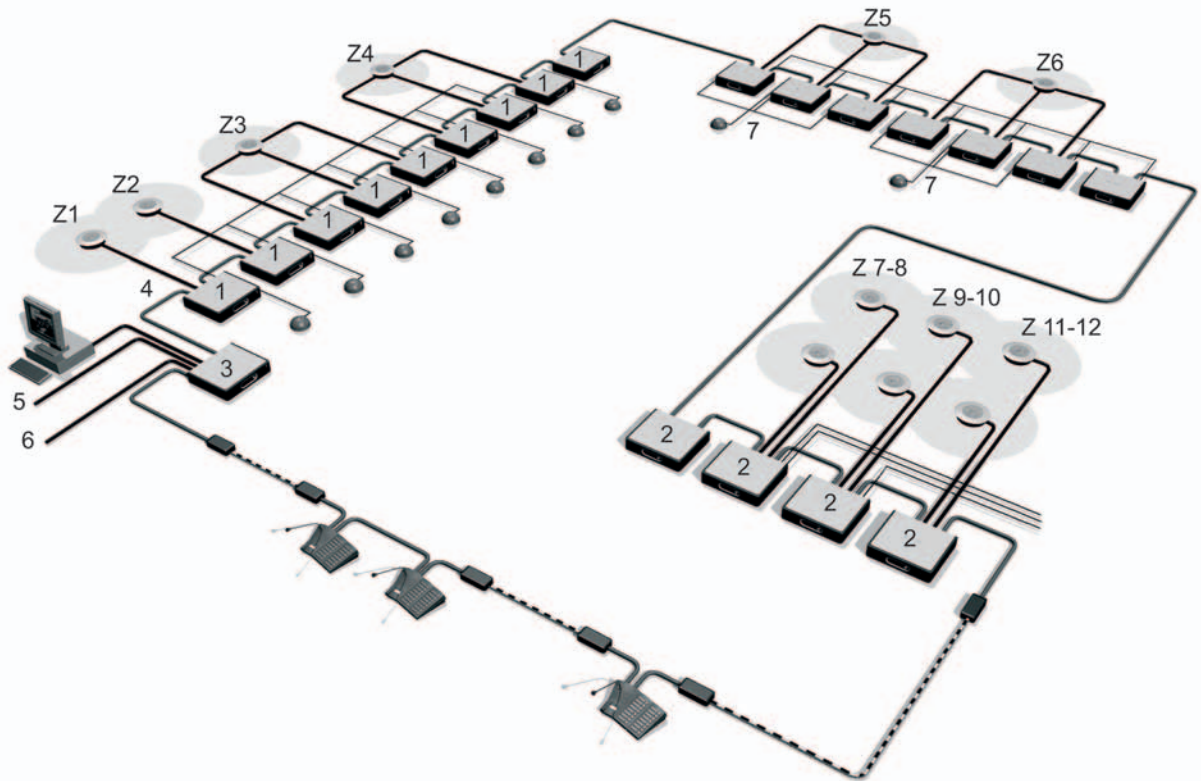Glas Optical Fiber

Plastic Optical Fiber

Ambient Noise Sensing Microphone
4 = To fire Detection System
5 = Call Microphone
6 = Background Music
7 = Local Audio

BOSCH

This example is slightly different from example 1. The number of zones remains the same, but the power (wattage) requirements for the zones are different. Also there are differences in the number of call stations, music source inputs, local audio inputs and fire alarm interface. The changes in the system parameters may have a direct influence on the equipment quantity, although the number of network controllers is the same.

The local audio inputs are connected directly to the respective power amplifiers of the zones where the local audio is specified. The control outputs from the fire alarm detection system can be connected to any of the control inputs. The call microphone can be connected to any of the audio inputs of the network controller, and the microphone switch priority contact can be connected to any of the control inputs.

The combination of call microphone and control input acts as a call station. The AVC microphone for the specified amplifier zones can be connected to the microphone input of the corresponding amplifier and the microphone input to be configured as AVC input. If multiple amplifiers are used with a single ambient sensing microphone, the ambient sensing signal is then routed through the network.

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Configuration Example 3

- 36 zones
  - 24 zones with 125 W
  - 6 zones with 250 W
  - 6 zones with 500 W
- 4 call stations (3 with 24 selections and 1 with 40 selections)
  - First call station at 40 meters from the network controller, installed in an equipment room
  - Second call station at 300 meters from the first call station
  - Third call station at 200 meters from the second call station
  - Fourth call station at 25 meters from the third call station.
- 2 call microphones
- 2 music sources
- Interface with fire alarm system – 24 control inputs needed
- Spare power amplifiers
- Both amplifier and loudspeaker line supervision

Bill of Materials

Quantity	Unit Name	
1	LBB 4401/00	Network Controller
6	LBB 4414/00	Fiber Interface
7	LBB 4421/10	Power Amplifier 1 x 500 W
4	LBB 4422/10	Power Amplifier 2 x 250 W
7	LBB 4424/10	Power Amplifier 4 x 125 W
4	LBB 4430/00	Call Station Basic
13	LBB 4432/00	Call Station Keypad
43	LBB 4442/00	Line Supervision Set
1	LBB 4470/00	Configuration, Diagnostic and Logging Software

System Overview

Legend

1 = 1 x 500 W Power Amplifier
2 = 2 x 250 W Power Amplifier
3 = 8 x 60 W Power Amplifier
4 = Network Controller

Call Station

Keypads

Loudspeaker Zone
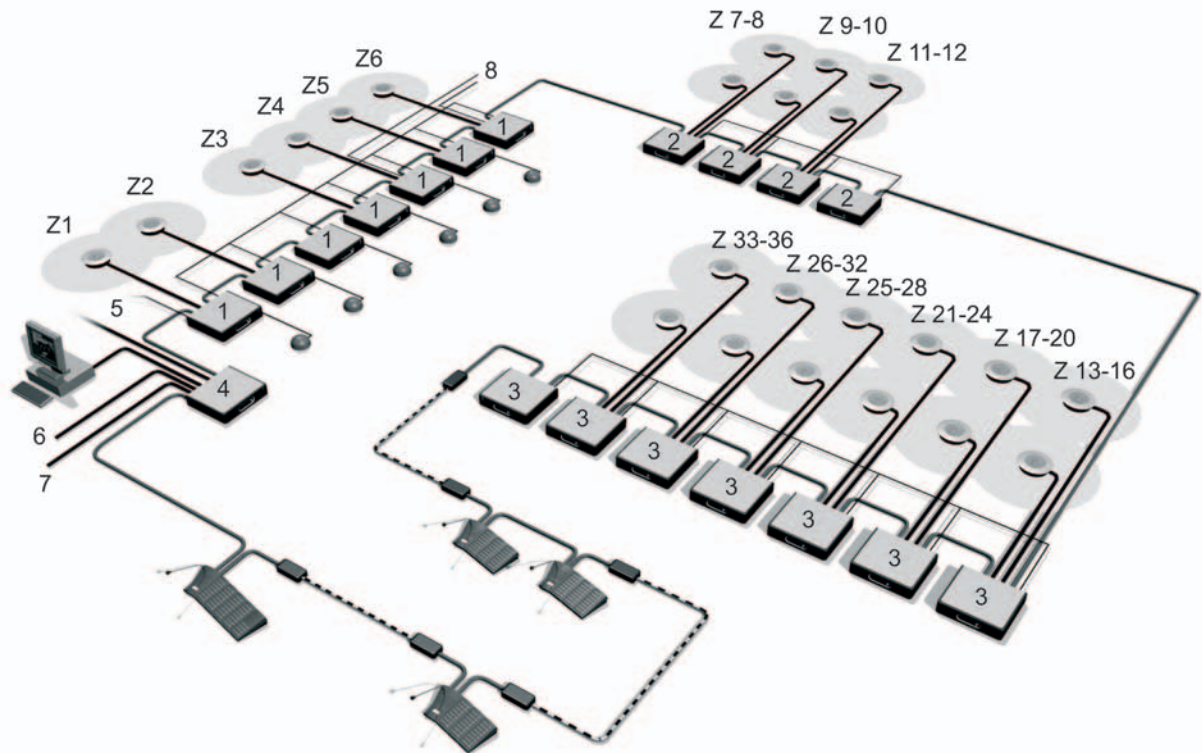
Fiber Interface with Power Supply

Glas Optical Fiber

Plastic Optical Fiber

Ambient Noise Sensing Microphone

5 = To fire Detection System
6 = Background Music
7 = Call Microphone
8 = Local Audio

BOSCH

This configuration has more zones, music sources and fire alarm control inputs than example 2. The power requirements for the zones and the distances between the call stations are also different. The number of line supervisory sets is related to the number of zones involved in the system and the required ratio of main power amplifiers to spare power amplifiers. The zone-switching concept of the Praesideo system is based on digital matrix switching. This concept is more cost-effective as it allows the loudspeaker line monitoring to be incorporated in the power amplifier itself. Different power amplifier types are used to meet the different power requirements of specific zones.

BOSCH

Configuration Example 4

- 36 zones
  - 24 zones with 125 W
  - 6 zones with 250 W
  - 6 zones with 500 W
- 6 call stations (5 with 24 selections and 1 with 36 selections custom-made)
  - First call station at 40 meters from the network controller, installed in an equipment room
  - Second call station at 300 meters from the first call station
  - Third call station at 200 meters from the second call station
  - Fourth call station at 25 meters from the third call station
  - Fifth call station at 100 meters from the fourth call station
  - Sixth call station at 40 meters from the fifth call station
- 2 call microphones
- 3 music sources
- 2 local audio inputs on the 500 W zones
- Interface with fire alarm system – 20 control inputs needed
- Spare power amplifiers
- 8 audio channels for recording purposes
- Both amplifier and loudspeaker line supervision
- All 500 W zones have AVC

Bill of Materials

Quantity	Unit Name	
1	LBB 4401/00	Network Controller
1	LBB 4402/00	Audio Expander
6	LBB 4414/00	Fiber Interface
7	LBB 4421/10	Power Amplifier 1 x 500 W
4	LBB 4422/10	Power Amplifier 2 x 250 W
7	LBB 4424/10	Power Amplifier 4 x 125 W
5	LBB 4430/00	Call Station Basic
15	LBB 4432/00	Call Station Keypad
1	LBB 4433/00	Call Station Kit
5	LBB 4434/00	Call Station Keypad Kit
43	LBB 4442/00	Line Supervision Set
1	LBB 4470/00	Configuration, Diagnostic and Logging Software

System Overview

Legend

1 = 1 x 500 W Power Amplifier
2 = 2 x 250 W Power Amplifier
3 = 8 x 60 W Power Amplifier
4 = Network Controller
5 = Audio Expander

Call Station

Keypads

Loudspeaker Zone

Fiber Interface with Power Supply

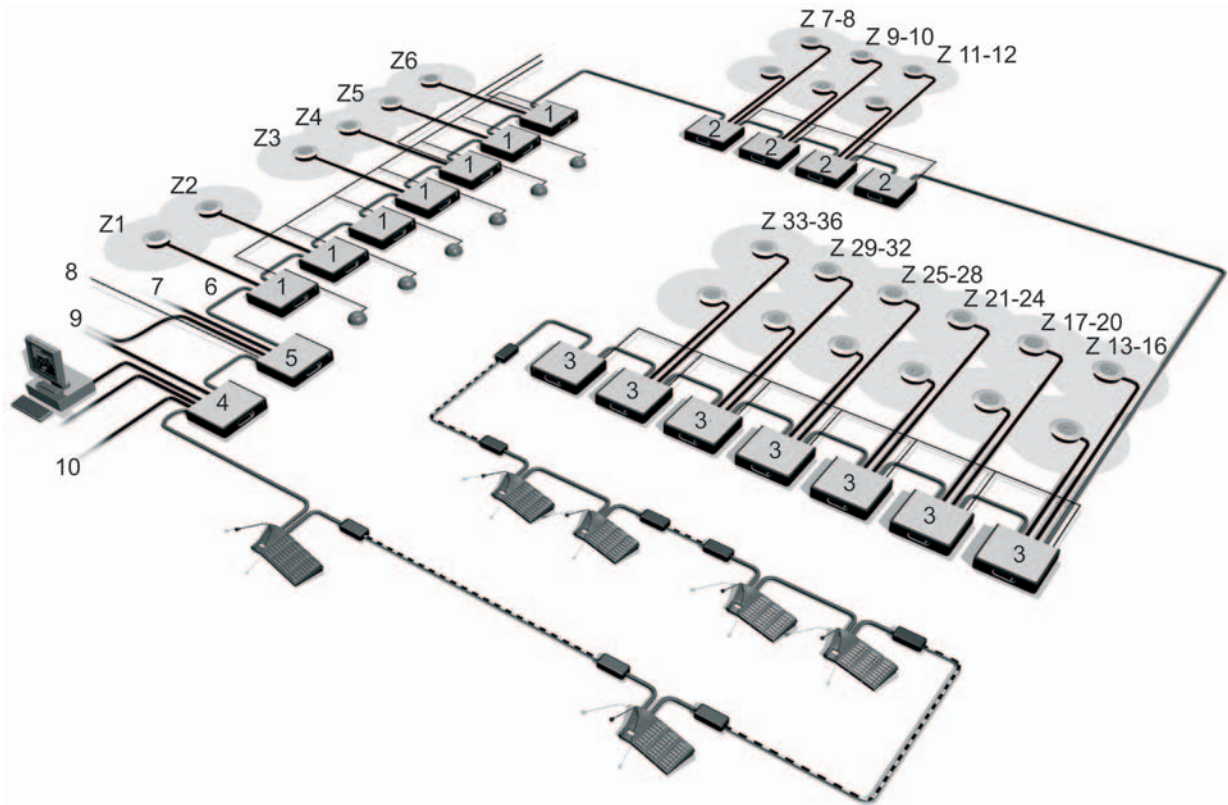Glas Optical Fiber

Plastic Optical Fiber

Ambient Noise Sensing Microphone

6 = To fire Detection System
7 = Call Microphone
8 = Background Music
9 = Audio Recorder
10 = Call Microphone
11 = Local Audio

BOSCH

This example uses AVC for all the zones with 500 W power, and has more call stations than example 3. The call stations are a combination of standard and custom-made. The custom-made call stations use the call station kit and call station keypad kit. Once the keypad inputs for making a selection are defined, the corresponding outputs will behave in exactly the same way as the call station keypad LEDs.

This example uses one audio expander to derive 4 more channels for recording, in addition to the 4 audio channels available from the network controller.

The system also incorporates local audio for some of the zones. There is no difference in the bill of materials of the system even if additional audio inputs, control inputs or AVC are added, provided that these are within the availability range for the specific units concerned. The type of cable used between any two units depends on the distance. If the distance between two nodes is up to 50 meters then plastic optical fiber cable can be used.

If it is more than 50 meters, glass optical fiber cable must be used, or an additional network splitter can be used as a repeater to cover the next 50 meters.

BOSCH

Configuration Example 5

- 16 zones
  - 6 zones with 125 W
  - 4 zones with 250 W
  - 6 zones with 500 W
- 4 call stations (1 with 24 selections and 3 with 16 selections)
  - First call station at 40 meters from the network controller, installed in an equipment room
  - Second call station at 300 meters from the first call station
  - Third call station at 200 meters from the second call station
  - Fourth call station at 25 meters from the third call station
- 2 call microphone inputs
- 2 music sources
- 6 local audio inputs on the 500 W zones
- Interface with fire alarm system – 16 control inputs needed
- Spare power amplifiers
- Both amplifier and loudspeaker line supervision

Bill of Materials

Quantity	Unit Name	
1	LBB 4401/00	Network Controller
6	LBB 4414/00	Fiber Interface
7	LBB 4421/10	Power Amplifier 1 x 500 W
3	LBB 4422/10	Power Amplifier 2 x 250 W
3	LBB 4424/10	Power Amplifier 4 x 125 W
4	LBB 4430/00	Call Station Basic
9	LBB 4432/00	Call Station Keypad
23	LBB 4442/00	Line Supervision Set
1	LBB 4470/00	Configuration, Diagnostic and Logging Software

System Overview

Legend

1 = 1 x 500 W Power Amplifier
2 = 2 x 250 W Power Amplifier
3 = 8 x 60 W Power Amplifier
4 = Network Controller
5 = Audio Expander

Call Station

Keypads

Loudspeaker Zone

Fiber Interface with Power Supply

Glas Optical Fiber
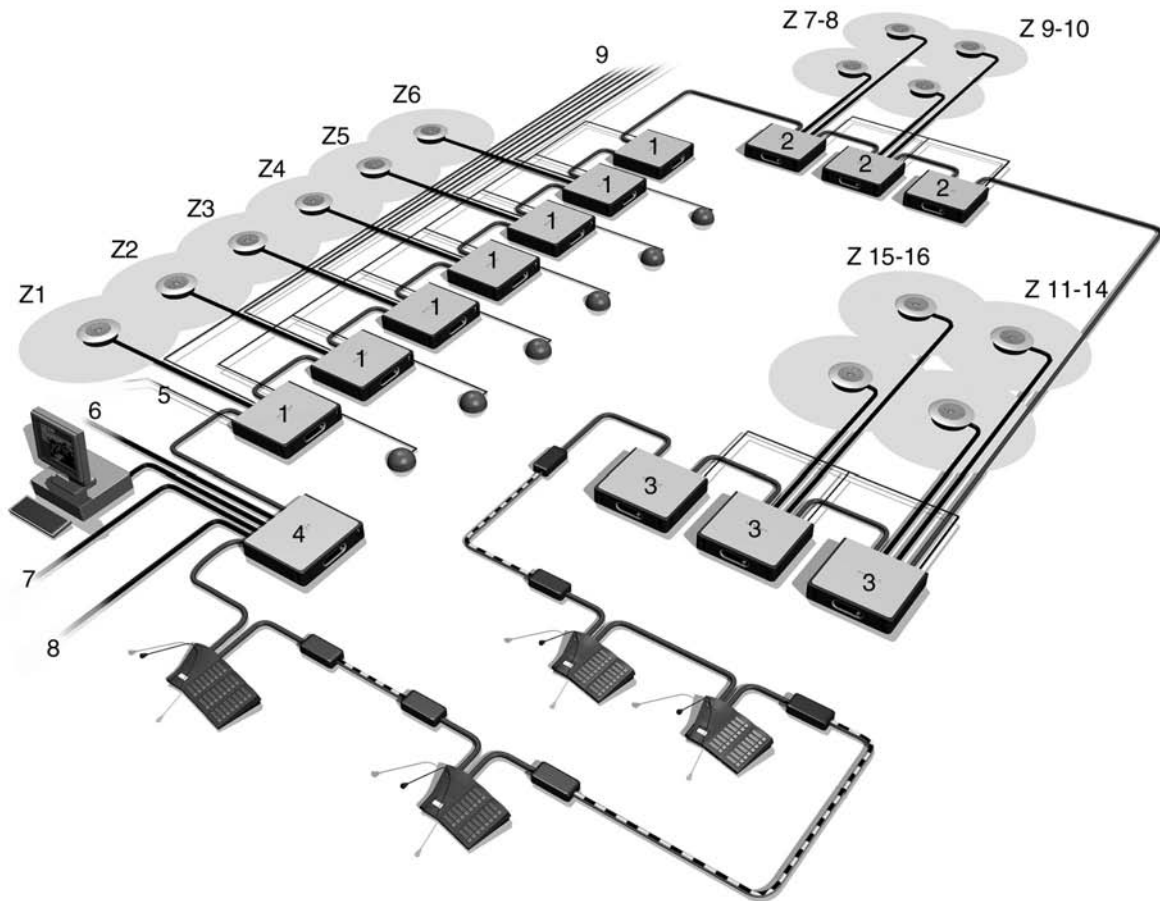
Plastic Optical Fiber

Ambient Noise Sensing Microphone

5 = To fire Detection System
6 = Background Music
7 = Call Microphone
8 = Call Microphone
9 = Local Audio

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In this configuration, six local audio inputs are required. If a local audio input is only applicable to a specific amplifier channel, it can be connected to the audio input of that particular power amplifier. The audio input of the power amplifier can be routed to that particular amplifier channel as default. This will allow local background music sources to be routed to a particular area independently of the system BGM sources.

The configuration software is required in all the examples, because it is always required for configuration of the system. In all the examples, diagnostic and logging software is also included as part of the system. The configuration software and the diagnostic & logging software can be accessed by the same PC. The PC can be connected to the network controller via Ethernet. If the network controller is connected to the LAN, then any PC in the LAN with authorized ID and password can access the network controller.

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