# Bosch Communications Systems
## 2011 Bosch Public Address Product Catalogue

125 Years Bosch 1886–2011

BOSCH
Invented for life

# Advanced **acoustical expertise**

With more than 60 years of experience in the design and development of electro-acoustic technology, Bosch is an established leader in the field. Their guiding principle is to create products that are superior in terms of technology, design and ease of use. From waveguide to array technology, and 3-D simulation to cutting edge design, Bosch's acoustical expertise is as extensive as it is innovative. Turning comprehensive experience into world-class acoustical solutions – that's how Bosch continues to lead the way.
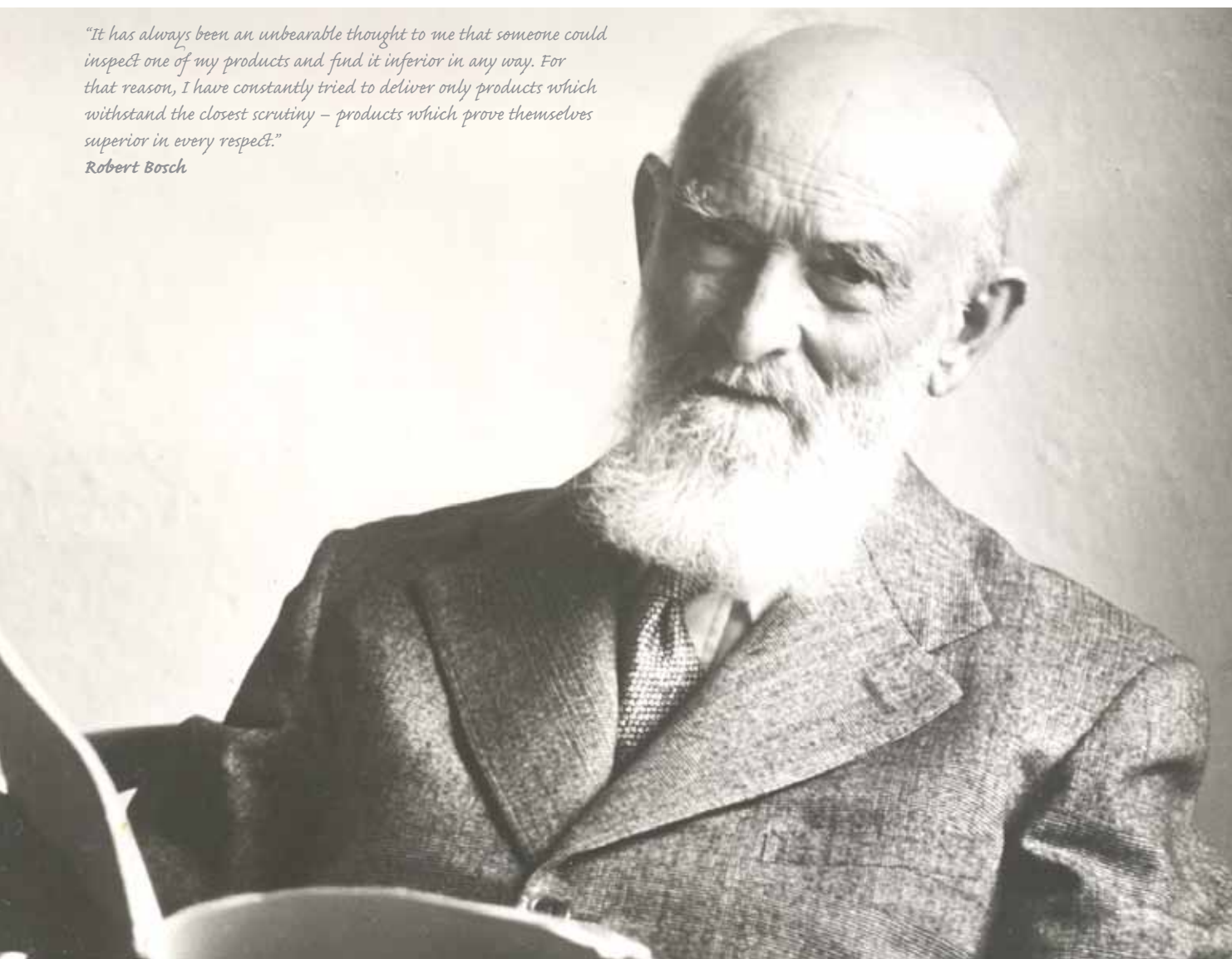
## Enabling optimal acoustics

At Bosch, our expertise is in developing superior technology for an optimal acoustical environment. Sometimes this means high quality background music with a consistent sound level everywhere in the listening area. Other times, as in the case of an emergency, it means messages which are received clearly, with high speech intelligibility – even when there is considerable background noise. It's all made possible through the technologies developed by Bosch: cardioid column loudspeakers, feedback suppression, reverberation technology, and many others. And Bosch continues to innovate, creating today's technologies which will become tomorrow's industry standards.

## Investment in R&D

Bosch's reputation for producing state of the art technologies is largely due to the extensive research that it invests in. Its commitment to innovation is huge: Bosch owns and operates one of Europe's largest acoustical test and measurement facilities. This test centre has 5 fully equipped anechoic rooms, allowing Bosch to accurately and automatically measure microphones and loudspeakers. Extensive testing – all done according to internationally recognised industry standards – ensures that customers can be confident about the high quality of every Bosch acoustical product.

*"It has always been an unbearable thought to me that someone could inspect one of my products and find it inferior in any way. For that reason, I have constantly tried to deliver only products which withstand the closest scrutiny – products which prove themselves superior in every respect."*
*Robert Bosch*

# Table of Contents

# Plena Easy

## Mixer Amplifiers



**Product Description:**

These Plena Mixer amplifiers provide a high performance plug and play solution for public address applications. Combining the reliability that is synonymous with the name Bosch, and modern state-of-the-art features, they are in a league of their own.

The Plena Mixer amplifiers are easy to use, taking complexity away from the user and putting it where it belongs, inside the equipment. Providing a crisp call or clear music as easy as turning on a radio, the Plena Mixer amplifiers are surprisingly affordable, without sacrificing features such as ducking, priority and flexibility.

**Key Features:**

- 1 and 2 Zone output models
- Multiple Microphone/ Line inputs on XLR connectors plus 3 music source inputs
- Detachable labels for inputs and outputs
- Coloured pins on the front panel indicate preferred settings for users
- 100V, Telephone and call station input with priority & VOX
- Voice activated emergency override
- 2-tone chime built in (7 more chimes optional with call stations)
- Outputs for line out, announcement only out, music only out and an insert point.
- 24V backup input with 24V charger (only on the 2 zone models)
- Separate optimised tone controls for microphone and music sources

**Schematic:**



Horn Speaker

Cabinet
Loudspeakers

Sphere Speakers

Paging
Microphone

Feedback
Suppressor

Plena
Amplifier

Message
Manager

Plena Mixer
Amplifier

Microphone

Aux iPod Dock

DVD Player
& Tuner
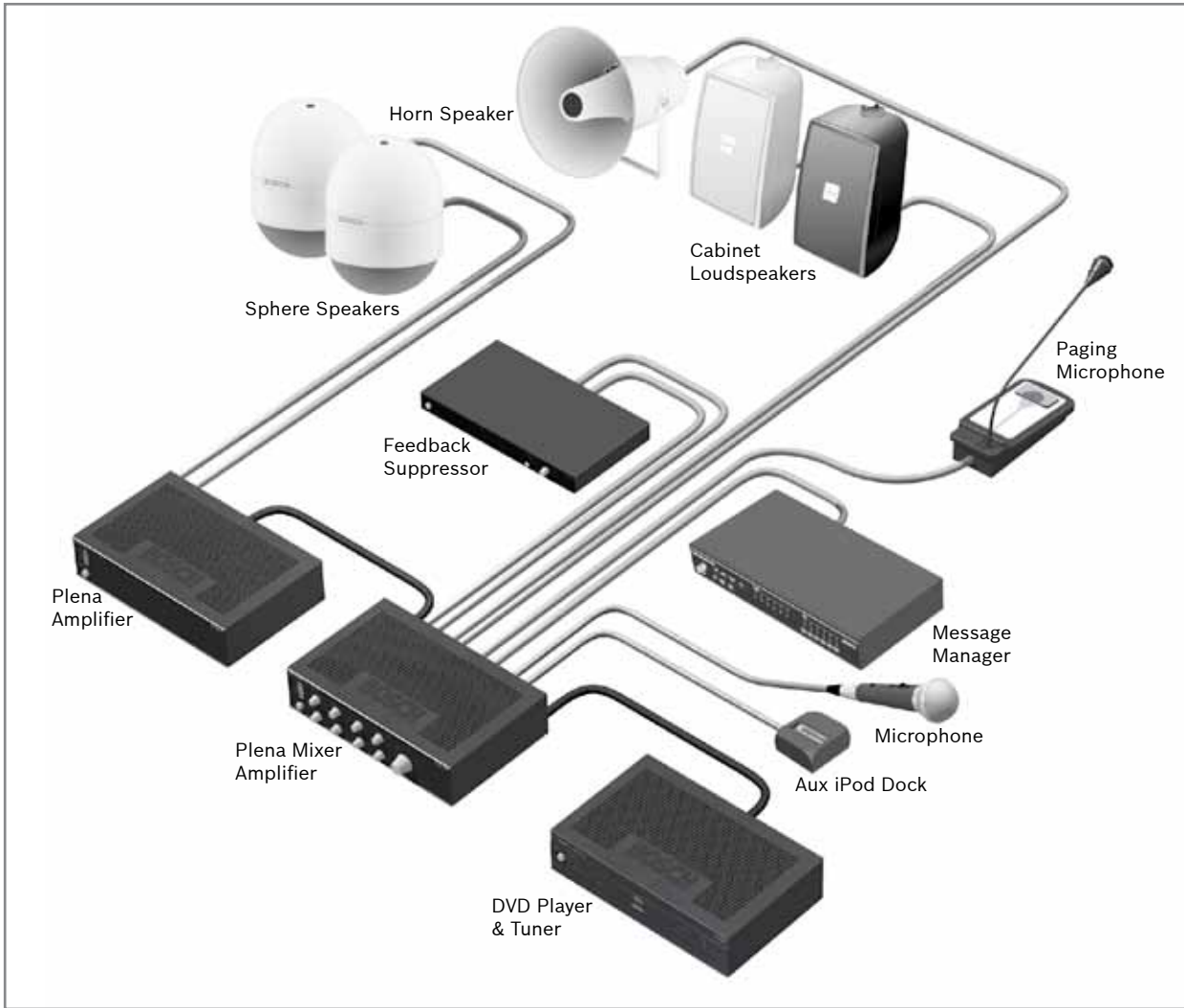
## Model Specification Table

|  | Zones | Mic/line inputs (XLR) | Music Source inputs (RCA) | Insert Point | Output power | Weight (approx) | Dimensions |
|---|---|---|---|---|---|---|---|
| **1 Zone Models** |  |  |  |  |  |  |  |
| PLE-1MA030 | 1 | 4 | 3 | No | 30W | 5 | 100x430x270 |
| PLE-1MA060 | 1 | 4 | 3 | No | 60W | 8.5 | 100x430x270 |
| PLE-1MA120 | 1 | 4 | 3 | No | 120W | 10.5 | 100x430x270 |
| **2 Zone Models** |  |  |  |  |  |  |  |
| PLE-2MA120 | 2 | 6 | 3 | Yes | 120W | 10.5 | 100x430x270 |
| PLE-2MA240 | 2 | 6 | 3 | Yes | 240W | 12.5 | 100x430x270 |

## Options and Accessories

| PLE-WP3S2Z | PLE-1CS | PLE-2CS | PLE-4TM |
|---|---|---|---|
| 2 Zone Source Selector | Desktop Call Station (all call) | Desktop Call Station (2 zones) | Tone generator for emergency and lockdown applications |

# Plena Pre-Amplifier

## PLE-10M2

**Key Features:**

- 6 Microphone/ Line inputs on XLR connectors plus 3 music source inputs
- Detachable labels for inputs and outputs
- Coloured pins on the front panel indicate preferred settings for users
- 100V, telephone and call station input with priority & VOX
- Voice activated emergency override
- 2-tone chime built in (7 more chimes optional with call stations)
- 24V backup input with 24V charger
- Separate tone controls for microphone and music sources

**Product Description:**

The Plena Mixer is a high performance, professional public address mixer with modern state of the art features.

Combined with the Plena amplifiers (PLE-1P120 and PLE-1P240), you can build an easy-to-operate yet powerful and flexible public address system. All this is without sacrificing features such as ducking, priority, and flexibility.

The mixer fulfils a wide variety of public address requirements, yet is still surprisingly affordable.

**Applications:**

Schools, Churches, Pubs, Bistros, Shopping Centres, Warehouses, Leisure Centres

## Options and Accessories

| PLE-WP3S2Z | PLE-1CS |
|---|---|
| 2 Zone Source Selector | Desktop Call Station (all call) |
| **PLE-2CS** | **PLE-4TM** |
| Desktop Call Station (2 zones) | Tone generator for emergency and lockdown applications |

**Schematic:**

Horn Speaker

Cabinet Loudspeakers

Sphere Speakers

Paging Microphone

Plena Amplifier

Feedback Suppressor

Plena Amplifier

Message Manager

Plena Mixer Amplifier

Microphone

Aux iPod Dock

DVD Player & Tuner
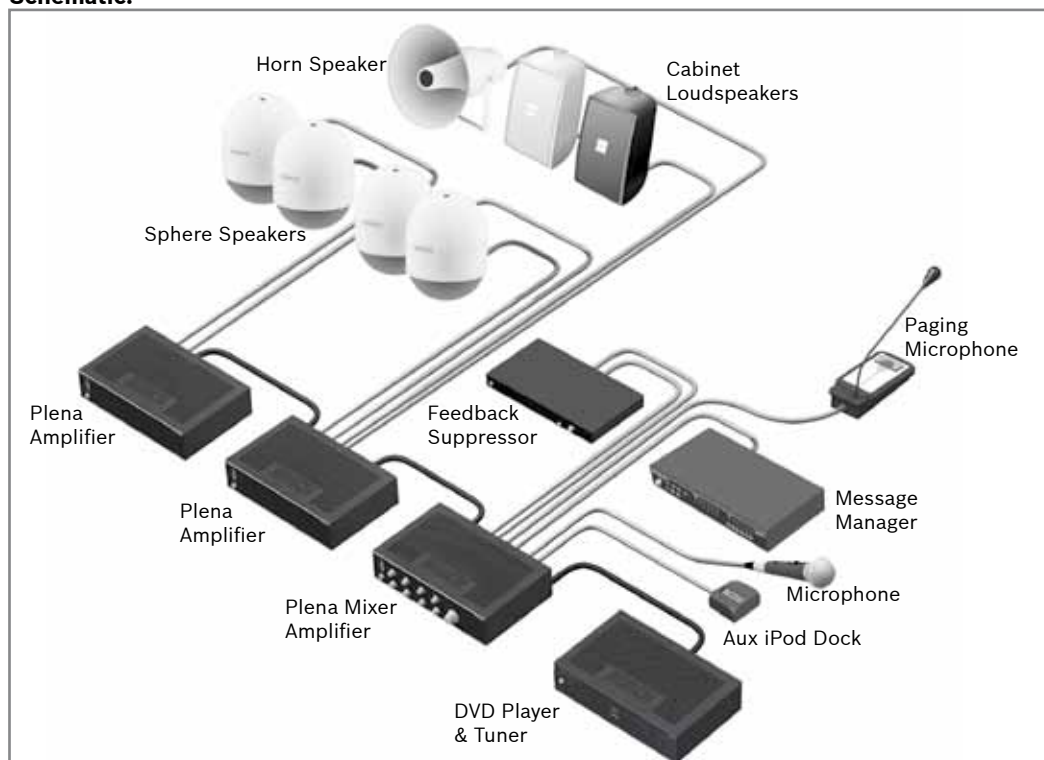
# Plena Amplifiers

## PLE-1P120 and PLE-1P240



**Key Features:**

- 120 and 240W power amplifiers in a compact housing
- 1V line level balanced input
- 100V and 8-ohm outputs
- 100V input for slave operation on 100V speaker line
- Temperature-controlled forced front to back ventilation (stackable)
- 24VDC back up power with built-in charger
- Level adjustment on rear panel
- LED VU meter for master output



**Product Description:**

The PLE-1P120 and PLE-1P240 are two high-power plug and play cost effective power amplifiers that deliver 120 and 240 Watts to constant voltage or 8ohm loads.

Built with premium quality and protections, they offer basic functionality and solid reliability at an affordable price.

The amplifiers offer straight 1V and 100V line in, and 8-ohms out. They can add power to the Plena mixer (PLE-10M2), or work anywhere where more power on an existing 100V line is needed or when line level signals are provided.

## Model Specification Table

| | 100V and 8ohm Output power (watts) | Weight (approx) | Dimensions | Rack Units |
|---|---|---|---|---|
| **Plena E Models** | | | | |
| PLE-1P120 | 120 | 10.5 | 100x430x270 | 2 |
| PLE-1P240 | 240 | 12.5 | 100x430x270 | 2 |
| **Plena Models** | | | | |
| LBB 1930/20 | 120 | 10.5 | 100x430x270 | 2 |
| LBB 1935/20 | 240 | 12.5 | 100x430x270 | 2 |
| LBB 1938/20 | 480 | 25 | 145x430x370 | 3 |
| PLN-1P1000 | 1000 | 32 | 145x430x430 | 3 |

# Loop Amplifier

## PLN-1LA10

**Product Description:**

The Plena Loop amplifier is a cost effective amplifier designed to drive a wire loop installed in the floor or ceiling covering an area of up to 600m$^2$ per amplifier.

This solution enables hearing aid users in the area enclosed by the wire loop to hear all the announcements and music. Hearing aid users can set their devices to the 'T-Mode' settings to receive the signal coming from the loop.

They receive announcements in excellent audio quality, without background noise or reverberations that normally impair intelligibility for people with hearing disabilities.

**Key Features:**
• High power, current drive amplifier
• 2 microphone/line inputs, one priority input (100V)
• Selectable frequency range and tone controls
• Limiter and Automatic Gain Control (AGC)
• Integrates in an AS60849 compliant system for emergency announcements

## Plena Inductive Loop Receiver

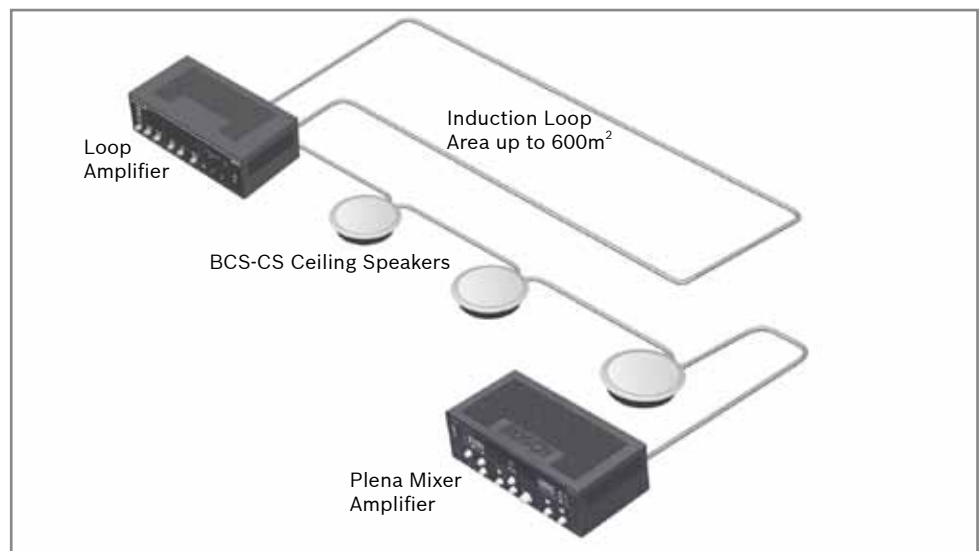**Key Features:**
• Monitoring of an inductive loop system
• Quick check of field strength
• Neck cord included for use by assisting hearing device users without "T" setting
• Earphones included

**Schematic:**

Induction Loop
Area up to 600m$^2$

Loop
Amplifier

BCS-CS Ceiling Speakers

Plena Mixer
Amplifier

# Accessories

## Microphone Call Stations

**Product Description:**
The Plena Call Station Microphones both represent a modern, high quality call station with a stable metal base design, a flexible microphone stem and a unidirectional condenser microphone. The PLE-2CS can make calls to selected zones when used in conjunction with a Plena 2 zone mixer, or mixer amplifiers. In addition to table top use, the Plena design allows neat flush mounting into desktops.

**PLE- CS1 Key Features:**
- Easy to use PTT key for call activation
- Momentary or toggle
- Stable metal base design with fixed 2m cable and lockable Euro style connector
- Green LED, indicating microphone activity

**PLE- CS2 Key Features:**
- Modern 2 zone call station for the PLE series
- Selectable gain
- Speech filter and limiter
- Output level control
- Loop through for up to 8 call stations
- Interconnection via 2 x RJ45
- LED indication for zone selection, busy and power on

## Plena Wall Panel

**Product Description:**
The Plena PLE-WP3S2Z Wall Panel is used to remotely select a music source and activate or deactivate zones of a PLE audio mixer amplifiers.

**Key Features:**
- Can be used for all PLE mixer amplifiers
- Remote selection of 3 music source inputs
- Remote zone selection
- Perfect companion to Bosch volume controls
- Daisy chain of multiple wall panels
- Powered from the amplifier via cat 5

## Volume Controls and Program Selector

**Product Description:**
LBC 1402/10, LBC 1412/10, LBC 1420/10, LBC 1434/10
- 12W, 36W and 100W versions
- Available in power-save or emergency fail safe versions
- Built-in 24VDC override relay
- Continuous rotating system
- Suitable for 3-wire and 4-wire systems

Bosch has a full range of volume controls and program selectors to provide a complete public address solution.

### Model Specification Table

| | LBC 1402/10* Volume Control | LBC 1412/10* Volume Control | LBC 1420/10* Volume Control | LBC 1434/10 Program Selector |
|---|---|---|---|---|
| **Rated power** | 12W | 36W | 100W | 100W |
| **Input voltage** | 100V | 100V | 100V | 100V |
| **Attenuation steps** | 5 x 3dB + off | 8 x 3dB + off | 10 x 2dB + off | N/A |
| **Number of programs** | N/A | N/A | N/A | 5 programs + off |
| **Dimensions** | 70 x 114 x 48.2mm | 70 x 114 x 48.2mm | 87 x 147 x 61.5mm | 70 x 114 x 48.2mm |

* to order fail safe version, please replace /10 with /20 e.g. 1402/20

# All-In-One

## PLN-2AIO120





**Product Description:**
The all-in-one PLN-2AIO120 BGM/Paging system is the versatile all-in-one solution to cover all the needs of background music (BGM), making announcements and paging people. This high performance yet affordable unit is very easy to install and operate.

**Applications:**
Typically used in shops, restaurants, supermarkets, pubs, clubs, canteens, school gyms, service stations, and other places where BGM creates atmosphere and where amplified speech needs to be clearly heard.

**Key Features:**
- All-in-one solution for background music and paging
- DVD/CD player for video and audio
- Supports MP3, JPEG, and multi-format video outputs
- FM/AM tuner with 10 presets and digital control
- Dual zone 120W mixer amplifier with volume control per zone
- Can be connected easily to an LBB 1950/10 call station for paging
- Selectable priority and VOX switching on microphone input 1
- Optional 2 tone chime to precede announcements
- Optical TOS link output that supports S/P DIF, DST and Dolby Digital IR
- Remote control

**Schematic:**



Paging Microphone

Microphone

Plena All-In-One

BCS-CS Ceiling Speakers

Cabinet Loudspeakers
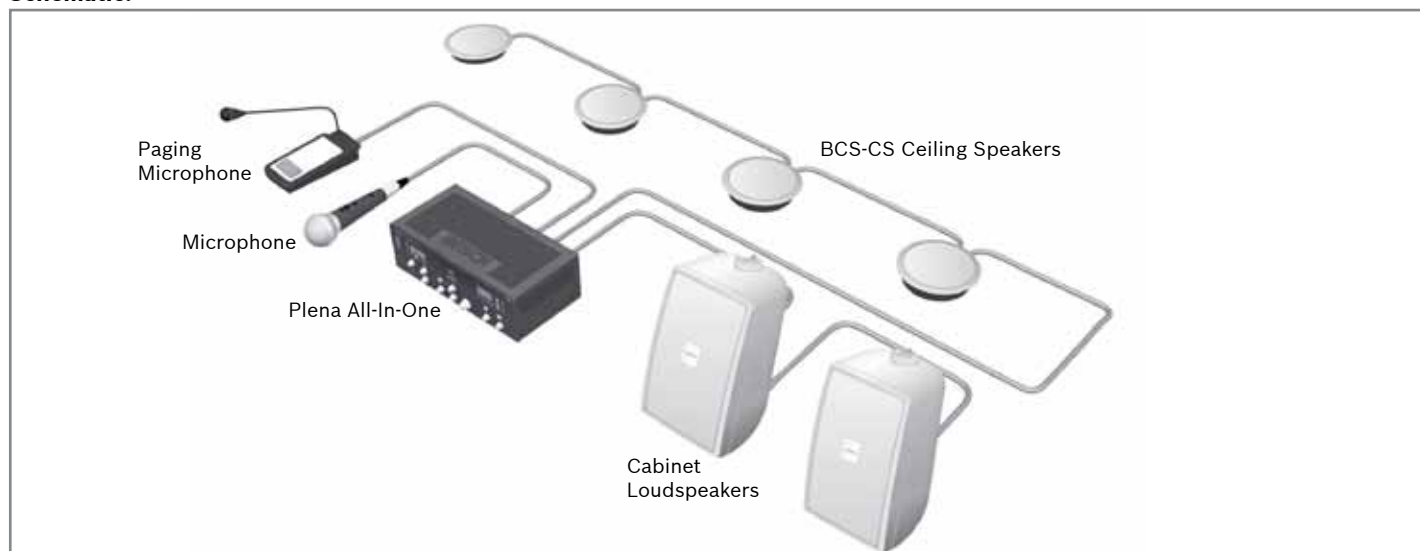
# Plena System Accesories

## Feedback Suppressor



**Product Description:**
The Plena feedback suppressor (**LBB 1968/00**) uses a powerful DSP with a patented algorithm to suppress acoustic feedback. It actively filters out unwanted room reverberations using an Echo cancellation and de-reverberation algorithm. By adding masked (inaudible) noise to the output signal or by shifting the frequency of the output signal by 5Hz, the Plena feedback suppressor is able to detect the reverb component of the signal and remove it before feedback occurs. This leaves the original signal intact.

**Key Features:**
• Patented feedback suppression algorithm
• Suppresses feedback before it occurs
• Automatically adapts to the acoustical situation
• Up to 12dB additional gain before feedback
• Balanced line or microphone input with phantom supply
• Second microphone input with automatic mixer

## DVD Player



**Product Description:**
The Plena BGM source unit (**PLN-DVDT**) is the ideal high quality source for background music (BGM) in public address systems. The unit consists of a DVD/CD player and a digitally controlled FM/AM tuner in a compact 2U high, 19" housing.

**Key Features:**
• DVD/CD for video and audio
• FM/AM tuner with 10 presets and digital control
• Simultaneous operation of player and tuner
• Separate outputs and levels for player and tuner
• Combined DVD/CD-Player/Tuner output with player priority
• Remote control

## Message Manager



**Product Description:**
The Plena message manager (**LBB 1965/00**) is a high performance, highly versatile stand alone digital message player. Using prerecorded announcements the message manager replays specific announcement(s) when triggered.

**Key Features:**
• Up to 12 messages and 12 trigger inputs
• Downloads messages from PC in WAV format
• CD quality audio replay messages
• EVAC compliant
• Front panel control and remote control

## Weekly Timer



**Product Description:**
The Plena weekly timer (**PLN-6TMW**) is an accurate timer for use in public address systems that need regular timed messages, signals or other controls. Ideal partner for the Plena message manager and voice alarm controller for timed messages.

**Key Features:**
• Two weekly programs
• 14 chimes
• Six contact outputs
• Automatic daylight savings (summer/winter time)
• BGM level control
• Hold pause function
• Programming on the unit and via the supplied PC program

# Plena Voice Alarm System

## Plena VAS Overview

**Product Description:**

The Plena Voice Alarm System (VAS) is designed for public address and emergency evacuation in small to medium sized applications such as factories, offices, hotels, shopping malls, supermarkets, sporting facilities, schools and universities.

All the essential EVAC functionality, such as system supervision, spare amplifier switching, loudspeaker line surveillance, digital message management and a fireman's panel interface is combined with proven audio technology to guarantee excellent speech intelligibility and message delivery.

The Plena VAS offers extensive possibilities, with emergency call (EMG) and background music (BGM) audio channels, up to 60 zones, eight call stations, and two remote control panels. It can function as a one channel, or as a two call channel (BGM and call) system. It is compatible with the Plena BGM source units and Plena amplifiers.

Bosch can deliver EVAC compliant loudspeakers and accessories for an integrated public address and voice alarm solution.

For more information or to learn more about how to design a Plena VAS system, contact your Bosch Communications Certified Partner.

**Key Features:**
- Complete AS60849 and EN54-16 compliance
- Up to 60 zones
- Up to 8 call stations
- One channel or two channel operation (BGM and call)
- Fully supervised system

# Ceiling Speakers

## BCS-CS Series



**Product Description:**

The BCS-CS series of ceiling loudspeakers are part of the latest 'EasyFit' range. BCS-CS Loudspeakers are lightweight, quick and easy to install, and are finished in an unobtrusive white with an attractive metal grille. Their wide frequency range and dispersion ensure good quality music reproduction and excellent speech intelligibility.

The BCS ceiling speakers use a dual cone single piece loudspeaker with 100V matching transformer mounted directly onto the frame. Making it the obvious solution for simple, no fuss applications.

**Key Features:**

- In four useful sizes: 4", 5", 6.5" and 8"
- Choice of power rating: 5W, 10W, 15W and 30W
- Wide bandwidth for music reproduction
- Wide dispersion of speech intelligibility
- Simple output-level selection
- Easily flush-mounted in ceilings or bulkheads
- Dependable rota-clamp fixing system
- Blends in with virtually all interiors

## Model Specification Table

| | BCS-CS4E (BW)* | BCS-CS5E (BW)* | BCS-CS8E (BW)* | BCS-CS8E (BW)* | BCS-CS830E (BW)* |
|---|---|---|---|---|---|
| **Driver** | 4" | 5" | 6.5" | 8" | 8" |
| **Rated power** | 5W | 5W | 10W | 15W | 30W |
| **Power handling max (100V)** | 8W | 8W | 15W | 22W | 45W |
| **Power taps** | 5 / 2.5 / 1 / 0.5 / 0.33W | 5 / 2.5 / 1 / 0.5 / 0.33W | 10 / 5 / 2.5 / 1.25W | 10 / 5 / 2.5 / 1.25W | 30 / 15 / 7.5 / 3.75W |
| **SPL at rated power (1kHz at 1m)** | | 97dB | 101dB | 105dB | 108dB |
| **SPL at 1W (1kHz at 1m)** | 94dB | 90dB | 91dB | 93dB | 93dB |
| **Frequency range** | 100Hz-15kHz | 70Hz-17kHz | 60Hz-20kHz | 50Hz-17kHz | 50Hz-17kHz |
| **Dispersion angle** | 144 degrees | 170 degrees | 170 degrees | 165 degrees | 100 degrees |
| **Dimensions (diameter x depth)** | 170 x 110mm | 202 x 90mm | 220 x 115mm | 273 x 103mm | 273 x 115mm |

*Brilliant white versions will be available in Q3/Q4 2011.*

# Ceiling Speakers

## MCS-3500 Series

**Product Description:**

The MCS 3500 Modular Ceiling Loudspeaker System removes the need to compromise between acoustic performance and aesthetic appeal. These high-quality loudspeaker units can be fitted with a metal or ABS grille finished in a neutral RAL white colour. There is a standard 6W model, a high-performance 12W model and a powerful 24W model. They are suitable for excellent speech and music in indoor public address applications. The loudspeaker unit back box includes a provision for mounting the optional line/loudspeaker supervision board.

**Key Features:**

- Tailored ceiling speaker system
- Innovative tri-cone loudspeaker
- Excellent speech and music reproduction
- No compromise between acoustics and aesthetics
- Constant directivity with wave guide grille
- Extreme dispersion angle results in fewer speakers in a given area
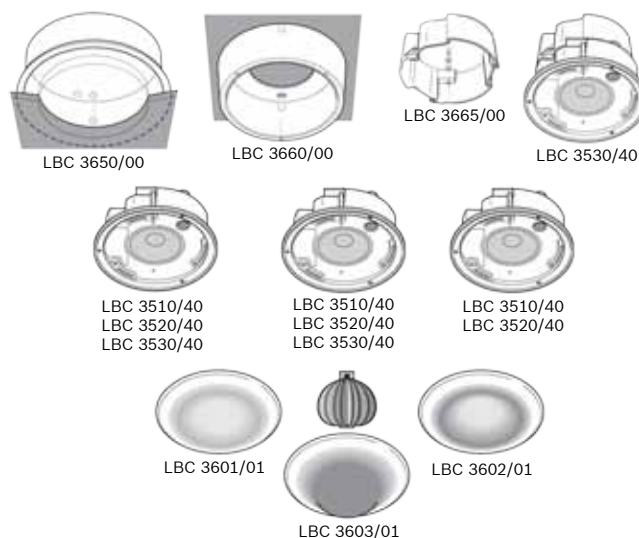
### Step 1 - Select the speaker

| Model Number | Power | Taps | SPL (Rated Power) | Dispersion angle 1kHz/4kHz (-6dB) | Dispersion angle with waveguide |
|---|---|---|---|---|---|
| LBC 3510/40 | 6W | 6 / 3 / 1.5W | 98dB | 155/70 deg | 150/120 deg |
| LBC 3520/40 | 12W | 12 / 6 / 3W | 101dB | 150/75 deg | 150/120 deg |
| LBC 3530/40 | 24W | 24 / 12 / 6W | 105dB | 150/70 deg | 145/130 deg |

### Step 2 - Optional rear-hardware

| Model Number | Description |
|---|---|
| LBC 3650/00 | Metal firedome, highly fire resistant thermosetting material used for the loudspeaker frame. |
| LBC 3660/01 | Surface mounting box used for securing loudspeakers to walls or hard ceilings. |
| LBC 3665/00 | Back box, secured onto the back of the loudspeakers frame prevents sound travelling via the ceiling cavity to adjacent areas, fully protects the loud speaker from dust.<br>Note: the LBC 3530/40 includes the back box as standard. |

### Step 3 - Select the grille

| Model Number | Description |
|---|---|
| LBC 3601/01 | Metal Grille |
| LBC 3601/01 | ABS (plastic) Grille |
| LBC 3603/01 | Metal Grille with waveguide |

LBC 3650/00  LBC 3660/00  LBC 3665/00  LBC 3530/40

LBC 3510/40 LBC 3520/40 LBC 3530/40

LBC 3510/40 LBC 3520/40 LBC 3530/40

LBC 3510/40 LBC 3520/40

LBC 3601/01  LBC 3602/01

LBC 3603/01

# Premium Ceiling Speakers

## Premium Sound Series

**Product Description:**

The Premium Sound Ceiling Loudspeaker series provides wide dispersion, high efficiency, high maximum output, ease of installation, and wide-range reproduction of music and voice. It consists of a baffle assembly, grille, back-can enclosure, coax two-way loudspeaker and internal output-power matching transformer. The loudspeaker features a waveguide coupled titanium coated dome tweeter.

The rear enclosure provides an optimum internal volume for extended low frequency performance. The loudspeakers utilise a second order crossover network at 3.3kHz, with a comprehensive protection circuit to protect the network, woofer, and tweeter drivers from excessive power levels.

With the addition of the ceiling subwoofer (LC2-PC60G6-10) to enhance the low frequency reproduction down to 45Hz, the Premium Sound Ceiling Speaker series offers a no compromise solution for high performance applications.

**Key Features:**

- High fidelity music, and speech reproduction
- High efficiency, high performance
- Attractive, easy to install flush mount design
- Complete range
- EVAC compliant
- Waveguide couple Ti tweeter
- Full bandwidth overload protection
- Front baffle wattage tap adjustment

## Model Specification Table

|  | LC2-PC30G6-4 | LC2-PC30G6-8L | LC2-PC30G6-8H | LC2PC60G6-10 |
|---|---|---|---|---|
| **Description** | 4 inch colaxial 2 way | 8 inch colaxial 2 way | 8 inch colaxial 2 way | 10 inch in ceiling subwoofer |
| **Rated power (100V / 8 Ohm)** | 30W / 50W | 30W / 150W | 60W / 150W | 60W / 175W |
| **Power handling max (100V)** | 50W | 75W | 75W | 100W |
| **Power taps** | 30 / 15 / 7.5 / 3.75W | 30 / 15 / 7.5 / 3.75W | 60 / 30 / 15 / 7.5W | 60 / 30 / 15 / 7.5W |
| **SPL at rated power (1kHz at 1m)** | 101dB | 106dB | 111dB | 112dB |
| **SPL at 1W (1kHz at 1m)** | 86dB | 91dB | 93dB | 94dB |
| **Frequency range** | 65Hz-20kHz | 50Hz-20kHz | 50Hz-20kHz | 45-150Hz |
| **Dispersion angle** | 130 degrees | 110 degrees | 75 degrees | N/A |
| **Dimensions (diameter x depth)** | 210 x 176mm | 300 x 255mm | 350 x 303mm | 350 x 303mm |
| **Weight** | 2.7kg | 5.0kg | 6.0kg | 7.0kg |
| **Connector** | 3 pole screw terminal | 3 pole screw terminal | 3 pole screw terminal | 3 pole screw terminal |

# Wall Mount Loudspeakers

## LB1-UW06(v) (D/L) - LB1-UW12 (D/L)

**Key Features:**
- Good speech intelligibility and background music reproduction
- Available in black or white
- 6W and 12W versions
- Affordable
- MDF construction
- With or without integral volume control (6W versions only)

## LB2-UC Series

**Key Features:**
- High-fidelity music and speech reproduction
- Suitable for indoor and under cover environments
- Selectable 8-ohm, 70V and 100V inputs
- Compact yet robust ABS enclosure
- 15W and 30W models
- Availabile in black or white
- Supplied with adjustable mounting bracket

## LB1-UM Series

**Key Features:**
- High-fidelity music and speech reproduction
- IP65 rated, suitable for demanding indoor and outdoor environments
- Selectable 8-ohm, 70V and 100V inputs
- Stylish aluminium extruded enclosure
- Supplied with adjustable low visibility wall-mounting bracket

### Model Specification Table

| | LB1-UW06(v) (D/L) | LB1-UW12 (D/L) | LB2-UC15 (D/L) | LB2-UC30 (D/L) | LB1-UM20 (D/L) | LB-UM50 (D/L) |
|---|---|---|---|---|---|---|
| **Rated power** | 6W | 12W | 15W | 30W | 20W | 50W |
| **Power taps** | 6 / 3 / 1.5 | 12 / 6 / 3W | 15 / 7.5 / 3.75 / 1.9W | 15 / 7.5 / 3.75W | 20 / 10 / 5 / 2.5W | 50 / 25 / 12.5 / 6.25W |
| **SPL at rated power** | 99dB | 104dB | 98dB | 105dB | 101dB | 108dB |
| **Frequency range (-10dB)** | 180Hz-20kHz | 160Hz-20kHz | 95Hz-19.5kHz | 100Hz-18.5kHZ | 90Hz-20kHz | 90-20kHz |
| **Opening angle (1kHz-6dB) H x V** | 165 x 158 deg | 195 x 69 deg | 179 x 168 deg | 160 x 150 deg | 174 x 127 deg | 186 x 84 deg |
| **Dimensions H x W x D** | 243 x 115 x 141/119mm | 441 x 151 x 150/111mm | 205 x 136 x 117mm | 250 x 160 x 140mm | 274 x 160 x 140mm | 405 x 160 x 180mm |
| **Weight** | 0.9kg | 2.5kg | 1.9kg | 2.4kg | 3.88kg | 5.58kg |
| **Connector** | 4 pole push in terminal block | 4 pole push in terminal block | Fitted 2m, 2 wire cable | Fitted 2m, 2 wire cable | 3 pole screw block | 3 pole screw block |

# Column Loudspeakers

## LA1-UW24 D/L - LA1-UW36 D/L

**Key Features:**
- 24W and 36W column speakers
- High sensitivity
- Good speech intelligibility and BGM reproduction
- MDF construction
- Affordable
- Available in black and white versions

## LA1-UM20E - LA1-UM40E

**Key Features:**
- 20W or 40W metal column speakers
- High sensitivity
- Excellent music and speech reproduction
- Weather resistant IP65 rating for outdoor applications
- 6 x 100V taps and 8-ohm settings

## LBC 3200/00 - LBC 3210/00

**Key Features:**
- Line array loudspeaker
- Excellent intelligibility for speech and music reproduction
- Extended listening area
- Powerful with high efficiency
- Ideal combination of advanced acoustics and easy application
- Weather resistant IP66 rating (LBC3210 only)

# Horn Loudspeakers

## BCS-HS Series

**Key Features:**
- High efficiency
- 10W and 20W versions
- Very good speech reproduction
- Very affordable
- Easy to install
- Weather resistance IP66

## LBC 3483/00 and LBC 3484/00

**Key Features:**
- High efficiency driver
- Excellent speech reproduction
- Up to 52.5/75W (maximum power)
- Provision for internal mounting of the optional line/loudspeaker supervision board for A60849 compliance
- Dust and water protected to a class IP65

## LBC 3700/00 Music Horn

**Key Features:**
- High quality music horn for excellent speech and music reproduction
- Two-way system
- High sensitivity
- Wide opening angle
- Dust and water protected to class IP65

## LBC 3428/00 Marine Horn

**Key Features:**
- Suitable for marine and industrial applications
- Glass reinforced polyester with strong, fire-retardant qualities
- Reduced maintenance costs
- Corrosion and chemical resistant
- Dust and water protected to a class IP66 and IP67

## Model Specification Table

| | Rated power | Power taps | SPL at rated power (1kHz at 1m) | Frequency range | Dispersion angle | Weight | Water and dust resistance |
|---|---|---|---|---|---|---|---|
| LBC 3483/00 | 35W | 35 / 17.5 / 8.75W | 127dB | 380Hz-5kHz | 50 deg at 1kHz | 4.5kg | IP65 |
| LBC 3484/00 | 50W | 50 / 25 / 12.5W | 129dB | 350Hz-4kHz | 60 deg at 1kHz | 6kg | IP65 |
| BCS-HS10E | 100V | 10 / 7.5 / 5 / 2.5 / 1.25W | 119dB | 300Hz-13kHz | 140 deg at 1kHz | 1.3kg | IP66 |
| BCS-HS20E | 100V | 20/ 15 / 10 / 7.5 / 5W | 124dB | 270Hz-9kHz | 90 deg at 1kHz | 2.1kg | IP66 |
| LBC 3700/00 | 45W | 30 / 15 / 7.5 / 3.75W | 112dB | 125Hz-20KHz | 105 deg at 1kHz | 5kg | IP65 |
| LBC 3428/00 | 22.5W | 15 / 7.5 / 5 / 4 / 2 / 0.8W | 114dB | 380Hz-5.5KHz | 160 deg at 1kHz | 2.6kg | IP67 |

# Spheres and Projectors

## LS1-OC100E

**Key Features:**
- Architecturally and acoustically innovative
- Hemi-directional pattern
- Optional bracket for fixed mounting
- For large area (over 600m$^2$ coverage), high-ceiling applications
- Complies with EVAC and international and safety regulations
- Provision for internal mounting of the optional line / loudspeaker supervision board

## LBC 3095/15

**Key Features:**
- Suitable for speech and music reproduction
- Simple power setting
- 5m fixed connection cable
- Splash-waterproof type

## LS1-UC20E-1

**Key Features:**
- Superb speech and music reproduction
- Wide sound spread
- Tough impact resistant enclosure
- 5m connecting cable
- Dust and water protected to IP65

## LP1-UC Series

**Key Features:**
- Superb speech and music reproduction
- 10W and 20W versions
- Integrated connection cable
- Suitable for loop through cabling
- Ceiling or wall mounting
- Tough, impact resistant enclosure
- Dust and water protected to IP65

### Model Specification Table

| | Rated power | Power taps | SPL at rated power (1kHz at 1m) | Frequency range | Dispersion angle | Weight | Water and dust resistance |
|---|---|---|---|---|---|---|---|
| LBC 3095/15 | 10W | 10 / 5 / 2W | 99dB | 130Hz-20kHz | 180 deg | 2.5kg | IPx3 |
| LS1-UC20E | 20W | 20 / 10 / 5W | 99dB | 80Hz-20kHz | 220 deg | 3kg | IP65 |
| LS1-OC100E | 100W | 100 / 50 / 25W | 109dB | 60Hz-17kHz | 170 deg | 29kg | IP42 |
| LP1-UC10E-1 | 10W | 10 / 5 / 2.5W | 96dB | 75Hz-20kHz | 220 deg | 3kg | IP65 |
| LP1-UC20E-1 | 20W | 20 / 10 / 5W | 100dB | 75Hz-20kHz | 220 deg | 3kg | IP65 |

# Conferencing Systems

## CCS 900 Ultro



**Product Description:**

The CCS 900 Ultro discussion system is a new plug-and-play, all-in-one discussion solution that combines elegant styling complementing any interior with innovative features. Intended primarily for small to medium sized meeting areas such as local government councils, town halls, local business centres, boardrooms and courtrooms, it has built-in MP3 recording and digital acoustic feedback suppression. It also offers a host of features to make managing meetings easier than ever. Among these is an advanced (patent pending) 'possible-to-speak' function which gives a visual indication of when the microphone is available for a delegate to take the floor. The system requires no special training or operator so that anyone can begin using the intuitive controls immediately.



**Key Features:**

- Advanced acoustic design with attractive look and feel
- Unique, patent-pending 'possible-to-speak' indicator
- Excellent speech intelligibility with genuine Bosch DAFS technology
- Built-in recording buffer and digital (MP3) recording and playback
- Can conserve SD card memory by only recording when microphone is receiving audio
- Language-independent LCD user interface
- Full discussion control with four operating modes
- Highly flexible and customisable system supporting up to 150 units
- Easy plug-and-play installation: one-cable, daisy-chain connectivity
- Easy to use, no operator required

# FAQs

## Bosch's guide to 100V commercial audio

**Why is high impedance (100V) any different from low ohm (Hi-Fi or pro audio) system?**

For short cable runs low impedance PA is acceptable. However longer speaker cable runs from a conventional power amplifier to a low ohm speaker (eg. Hi-Fi) results in a large degradation of audio quality due to resistive power loss in heat (I2R law). To reduce the loss from the cable length it is logical to use larger gauge cables (more copper). However, in many cases this is not a realistic or viable solution considering some cable runs can be 100m or more in length.

Power stations have a good idea to solve the I2R resistive power heat problem which can be applied to PA systems. When they run power over very long distances from power stations to houses, they minimise resistive power loss by running the power as high voltage and low current. To do this, they use a step-up transformer at the power station stepping it up (eg. 30,000V) and a step-down transformer at the end point (240V). This reduces power loss due to the I2R heating of the power cables.

In the same way as the power station, the amplifier also steps up the voltage to reduce the loss of the cable, and at the other end the 100V speaker contains a step down transformer to deliver the required voltage and power to the speaker. Thus the high impedance system can be run on a smaller, more cost effective cable, and have better audio quality over long cable runs.

**How do I wire speakers for high impedance (100V) PA systems?**

In Parallel. See the diagram below.
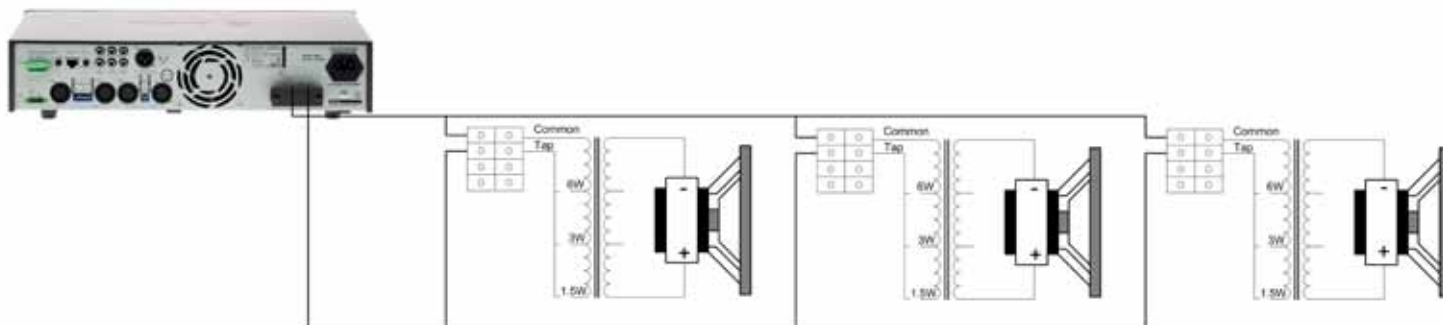


(As Bosch equipment is fitted with step up transformers in amplifiers, and step down transformers in Bosch speakers, there is no need to purchase these items separately or wire in the transformers.)

**There are so many types of speakers. What type of speakers do I need?**

There are no hard and fast rules for which speaker should be used in an application.
However, consideration should always be given to the following:

1. What is the PA system going to be used for, or in other words, what level of quality is actually required?
2. Do the speakers require weather protection? (IP rating)
3. What are the realistic mounting locations for speakers?

**Why would I use Loudspeaker Taps?**

Loudspeaker power ratings are defined in Watts. Many times not all of the loudspeaker's power is required to be used to get to the required SPL. The taps allow you to effectively turn down the power of the speaker via the transformer. This allows more loudspeakers to be used with a smaller amplifier, reducing cost.

**How do I know what size of amplifier I require?**

Simply add up the power of all the loudspeakers (taps) that you wish to run together from one amplifier.

Speaker 1 + Speaker 2 + Speaker 3 +..... = Min size of amplifier

Example: 8 speakers x 15W taps = 120W of amplification
This is the absolute minimum power you will require.

**Why would a PA require more than one zone?**

Many PA installations have different areas, with different requirements.

*Pub with a Bistro*

In this example there are 2 reasons:

•   Both areas may like to have the same background music or source, but at different volume levels.
•   The patrons at the bar do not want to be disturbed by the order numbers called from the paging microphone in the Bistro

Therefore:

•   Zone 1 will be the Bar
•   Zone 2 will be the Bistro

A Bosch Plena 2 zone mixer amplifier or alternatively a 2 zone pre-amplifier and power amplifier would be perfect solutions for this application.

**What wire does the Loop Amplifier require?**

Strand or solid core cable will be fine. There is a minimum and maximum gauge of wire that is required so that it can operate as an induction loop.
See table below.
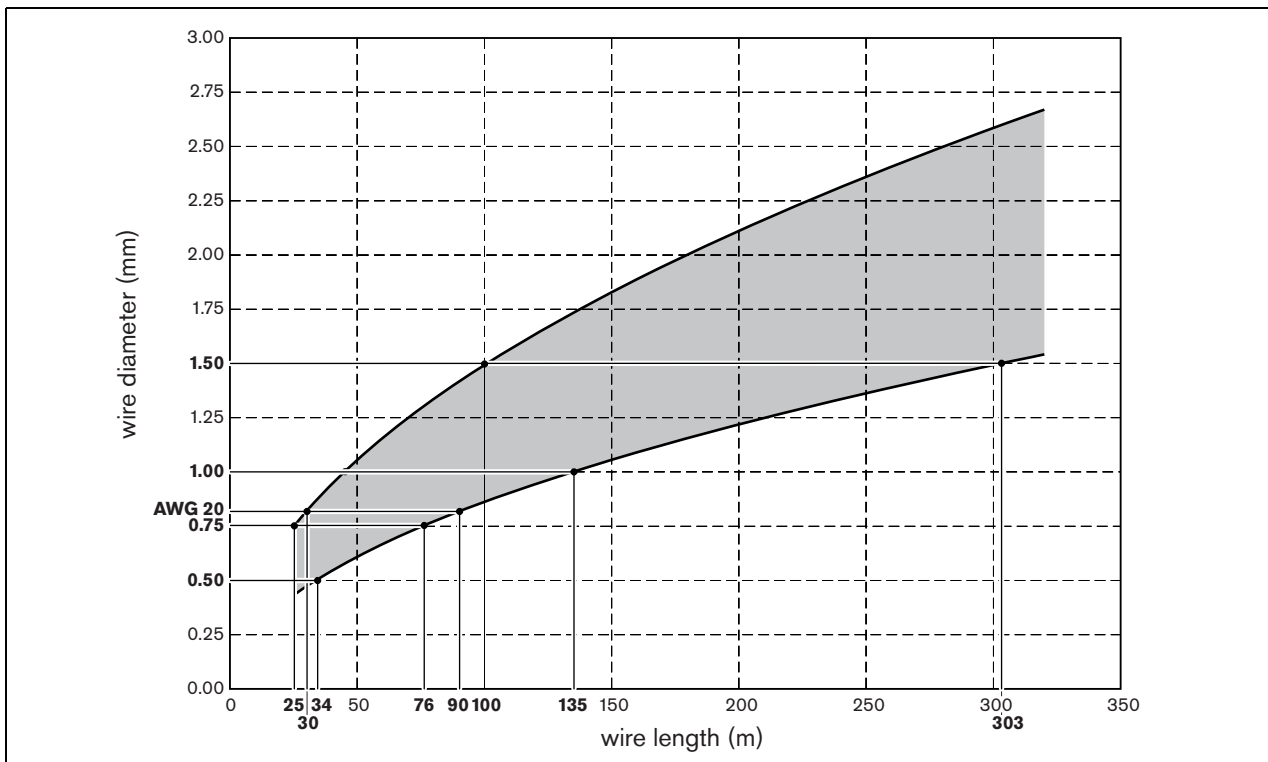


*Wire diameter vs. the wire length (copper wires)*

# Glossary

**Balanced Signal**
Balanced connections employ two conductors, each of which carries the same signal but with the polarity of one reversed with respect to the other. (eg. a microphone connection).

The chief advantage of the balanced line format is good rejection of external noise. Balanced lines reduce the amount of noise over distance, allowing a longer cable run. This is because electromagnetic interference will affect both signals the same way. Similarities between the two signals are automatically removed at the end of the transmission path when one signal is subtracted from the other.

**BGM**
(Background Music). Music or program source which is played at a lower volume that allows conversation. An approx level for BGM would not normally exceed 65dB. Applications include restaurants, retail shops, etc.

**Decibel (dB)**
Originally a measuring system developed and used by the telecommunications industry, referring to one-tenth of a Bel. Most commonly it is used in audio practices to represent a ratio between two different audio levels. It is important to note that the decibel is not an absolute number, but always refers to a ratio of two numbers. It is used so extensively because it is very easy to represent both very small and very large changes in relative levels. Because it is merely a ratio, a decibel alone has no units, and always must be related to some reference point, which is designated by a letter following the "dB" indication. 0 dBu is a voltage reference point equal to 0.775V rms.

**Distortion (Electonics)**
Refers to a measure of the difference between the output and input signals in a linear component, such as an amplifier.

**Distortion (PA)**
An undesirable, audible effect, usually due to the overloading of one or more components of the PA system.

**FGM**
(Foreground music). Loud projected program source or performance audio from a band or group that is the focus of an audience. Usual applications are performance venue areas such as theatres, auditoriums and nightclubs.

**Feedback (PA)**
A phenomenon where the sound from a loudspeaker is picked up by the microphone or other transducer, and is reproduced through a loudspeaker only to return to the same microphone to be reproduced. Each time the signal becomes larger until the systems runs away and rings, or feedback occurs producing the characteristic scream or squeal. These feedback loops often occur at particular frequencies.

**Frequency Response**
Frequency response is defined as the range between high and low frequencies that a component of an audio system can adequately handle, transmit, or receive, within a given variation, such as +/- 3dB. It is usually calculated by plotting frequencies versus amplitude; the frequency at which the amplitude drops by 3dB becomes the limit of the frequency response.

**Gain**
The amount an electronic circuit amplifies the original signal.

**GBF**
(Gain Before Feedback). The maximum gain a PA can generate towards a microphone before feedback occurs.

**Insert**
An audio circuit, in which an external processing device (such as a compressor, noise gate or equaliser) can be added to the signal chain within a device.

**IP Rating** *(see table on opposite page)*
A 2 digit number used to provide an Ingress Protection rating to a piece of electronic equipment against (most commonly) dust and water.

• The 1st number represents protection from solid objects, such as dust.
• The 2nd number represents protection from liquids, such as water.
• The higher the number, the more protection.

**Line level**
Line level is a term used to denote the strength of an audio signal used to transmit analogue sound between audio components such as CD and DVD players. It is a higher signal strength than a microphone signal level.

**Microphone level**
The electrical level (voltage) of signal generated by a microphone; a microphone level may be around 2 mV.

**Phantom Power (commonly known as +48V)**
Is a method for transmitting DC electric power through microphone cables to operate microphones that contain active electronic circuitry.

**Priority**
An input that is of a higher importance and will override other inputs in a audio system.

**Shield**
A shield is a conductive enclosure that protects against electromagnetic fields. In audio, unwanted EMF fields can create unwanted noise in audio circuits, usually found as a hum or a buzz. Most commonly, a cable shield consisting of a braided copper strands wrapped around the actual audio signal conductors; other shield. Those found in installation cable consist of a wrap of foil encircling the inner conductors. Audio enclosures usually use some form of metal enclosure that is connected to ground.

**Sound Pressure Level (SPL)**
Sound level is a logarithmic measure of the effective pressure of a sound relative to a reference value. It is measured in decibels (dB) above a standard reference level. The commonly used "zero" reference sound pressure in air is 20 μPa RMS, which is usually considered the threshold of human hearing (at 1kHz).

**Speaker Taps**
Speaker tapping is the method by which a speaker's power can be reduced, so that more speakers can be placed on a given power amplifier channel.

**Unbalanced Signal**
Unbalanced connections (sometimes called single-ended) employ two conductors, one at ground potential and the other carrying signal. Equipment operating at -10 dBV invariably uses unbalanced connections. (e.g. a coaxial connection).

**VOX**
A mode where by an input is activated in the presence of an audio signal.

**Zone(s)**
A term that describes a group of loudspeakers in an area that outputs always the same source.

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## IP Rating Table

| Value | 1st Digit | 2nd Digit |
|---|---|---|
| | **Protection of ingress of Solids** | **Protection of ingress of Liquids** |
| 0 | No Protection | No Protection |
| 1 | Protected against solid objects over 50mm (e.g hands, large tools) | Protected against vertically falling drops of water |
| 2 | Protected against solid object over 12mm (e.g fingers, large tools) | Protected against direct sprays of water up to 15 degrees from vertical |
| 3 | Protected against solid objects over 2.5mm (e.g wire, small tools) | Protected against direct sprays of water up to 60 degrees from vertical |
| 4 | Protected against solid objects over 1mm (e.g wires) | Protected against direct sprays of water from any direction, limited ingress permitted |
| 5 | Limited ingress against dust ingress | Protected against water jets from any direction, limited ingress permitted |
| 6 | Total protection against dust ingress | Protected against high pressure water jets from any direction, limited ingress permitted |
| 7 | | Protected against full immersion between 15cm and 1 metre in depth |
| 8 | | Protected against long periods of full immersion under pressure |

**A Tradition of Quality and Innovation**
For 125 years, the Bosch name has stood for quality and reliability. Bosch is the global supplier of choice for innovative technology, backed by the highest standards for service and support.

Bosch Communications Systems proudly offers a wide range of security, safety, communications and sound solutions that are relied upon every day in applications around the world, from government facilities and public venues to businesses, schools and homes.