PLENA **matrix** Digital Sound System

CONTROL   FLEXIBILITY   PERFORMANCE

Bosch Communications Systems

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The **PLENA matrix** offers:

→ A high-performance system for foreground/ BGM/Public Address/Paging applications

→ System flexibility:
  - DSP Matrix + DSP Amps for large installs
  - Call Stations for paging capability
  - DSP Amps (stand alone) for small installs
  - Control via PC GUI, iOS App, Wall Control Panels

→ Suitable for almost any music and speech distribution applications with up to 8 zones

→ Excellent audio quality

→ Powerful DSP to give the installer the required tools

→ Hardware and GUI features that make installation quick and easy

→ Quality and reliability

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Sample applications include:

- Hotels/Motels
- Bars
- Pubs
- Restaurants
- Small shopping malls
- Recreational centres
- Fitness centres/Gyms
- Offices buildings
- Meeting rooms
- Boardrooms
- Museums
- Government buildings
- Education facilities
- Houses of worship
- Regional airports

- Theatre call systems
- Stadiums − Back of house
- Cafes
- Beer gardens
- Small theme parks
- Community halls
- Conference venues
- Multi-purpose halls
- Sports clubs
- Small live band venues
- Soundscapes
- Ice skating rinks
- Department stores
- Fashion outlets
- Etc...

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Ideal for use with EV, Dynacord and Bosch Speakers

➔ The EVID range, ZX1i speakers and EVU are excellent products for BGM music systems

➔ They are commonly installed in venues that are between 2−8 zones, and provide excellent audio quality for the price point

➔ Other high-performance speakers from the EV, Dynacord and Bosch stables are available to suite a wide range of applications including foreground music

EV Electro-Voice

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DYNACORD®

The **PLENA matrix** family

➜ The **PLENA matrix** family includes:

- **PLM-8M8**   DSP Matrix Mixer/Processor

- **PLM-4P125**   4 x 125 W DSP Power Amplifier

- **PLM-4P220**   4 x 220 W DSP Power Amplifier

- **PLM-8CS**   8-Zone Call Station

- **PLM-WCP**   Wall Control Panel

and

- **BlueLine Gen2 Motion Detectors**

  for Auto Standby

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PLM-8M8 8-Zone DSP Matrix Mixer

➔ Front panel (no front panel controls)

Call Station microphone-in-use indicator

Call Station and
Wall Control Panel data

+48 VDC phantom power

Power indicator

Ethernet
control data

Mic/Line signal present and clip

Output signal

BGM line input signal present and clip

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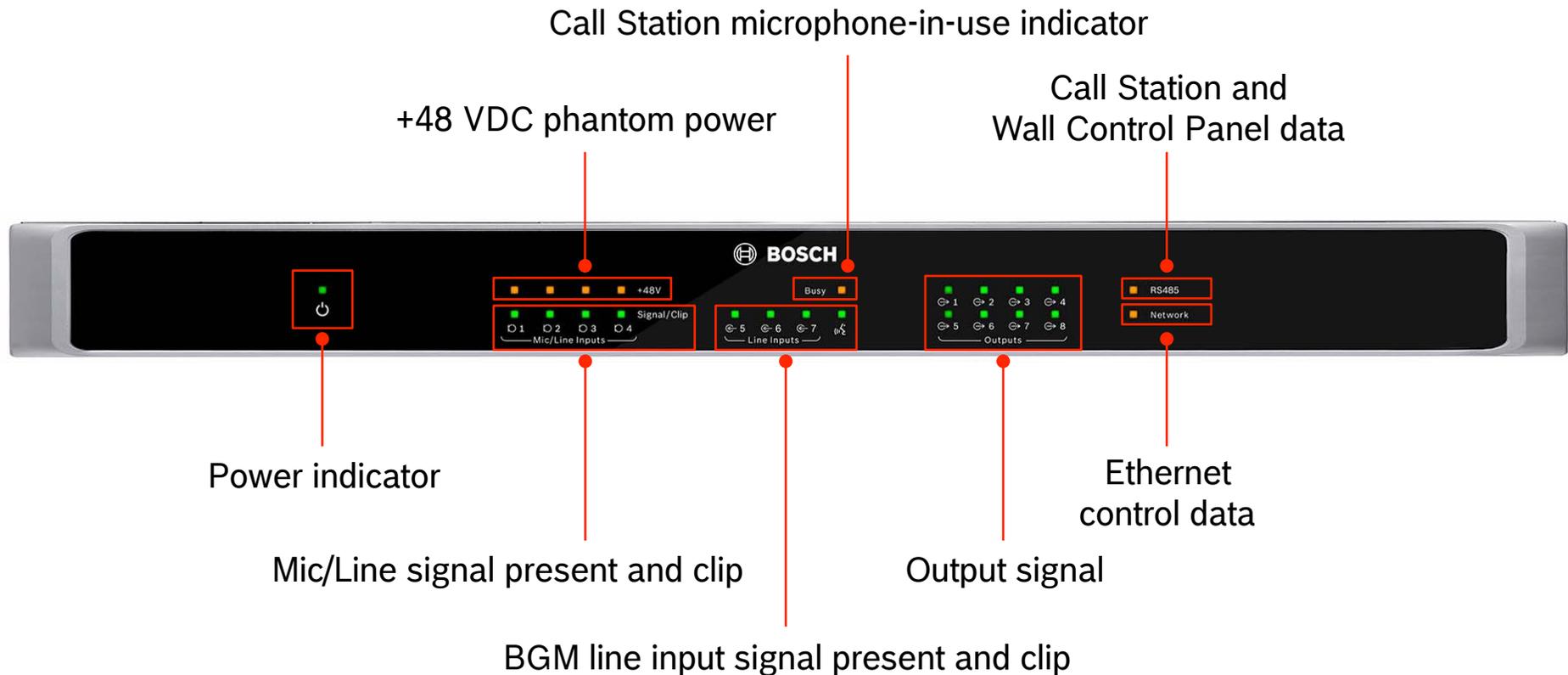
PLM-8M8 8-Zone DSP Matrix Mixer

➔ Rear panel layout

Contact closures for activation of emergency tones and override input

Wall Control Panel connection

Power switch and connector

Line outputs

3 x BGM line inputs via RCA

Ethernet control port

Amp Link outputs

4 x Mic/ line input via XLR/TRS combo connectors

Balanced line input for active override

Call Station connection

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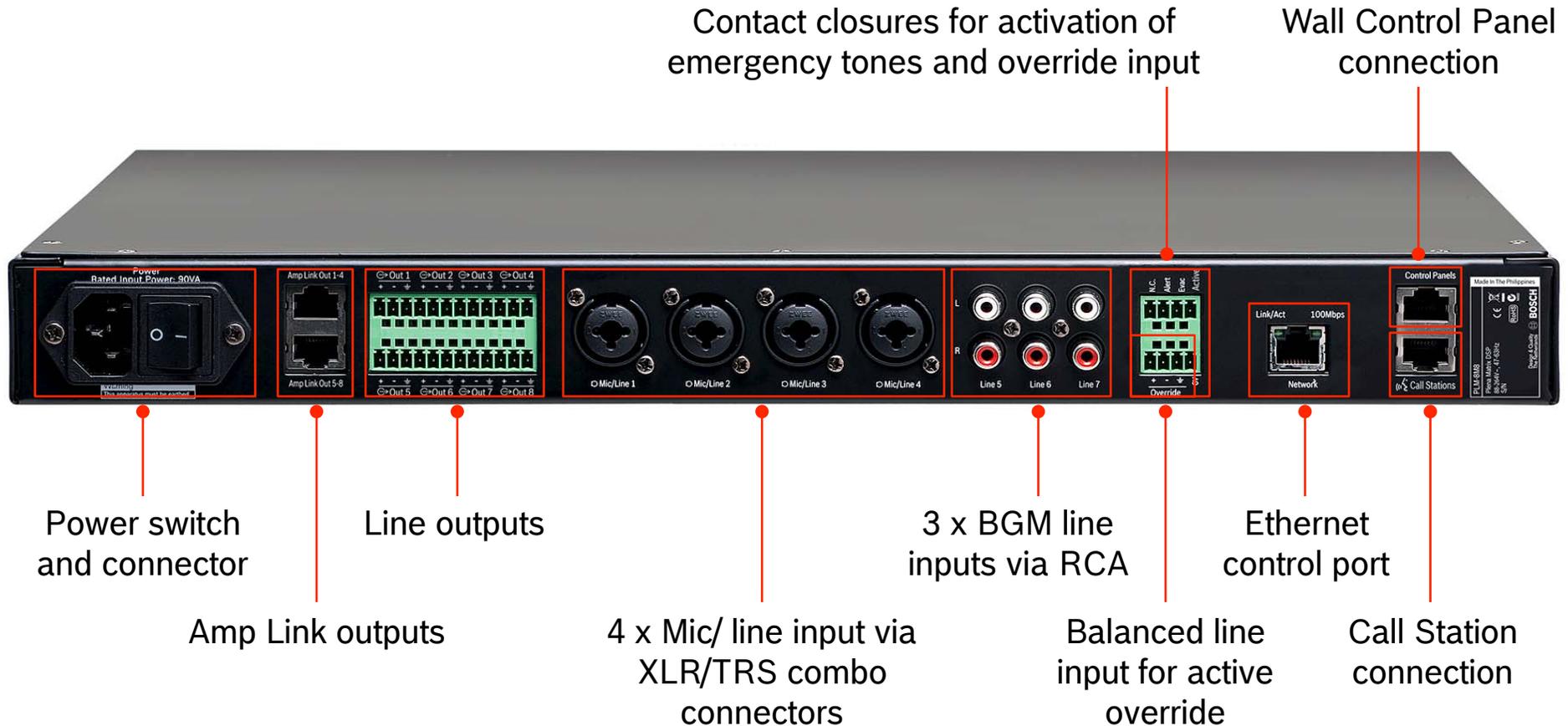
DSP Matrix Mixer features

User features:

→ Independent zone selection x 8

→ Input metering (PFL)

→ Independent mixing of 4 x mic/line inputs per zone

→ Independent 3 x BGM source selection per zone

→ Paging level control per zone

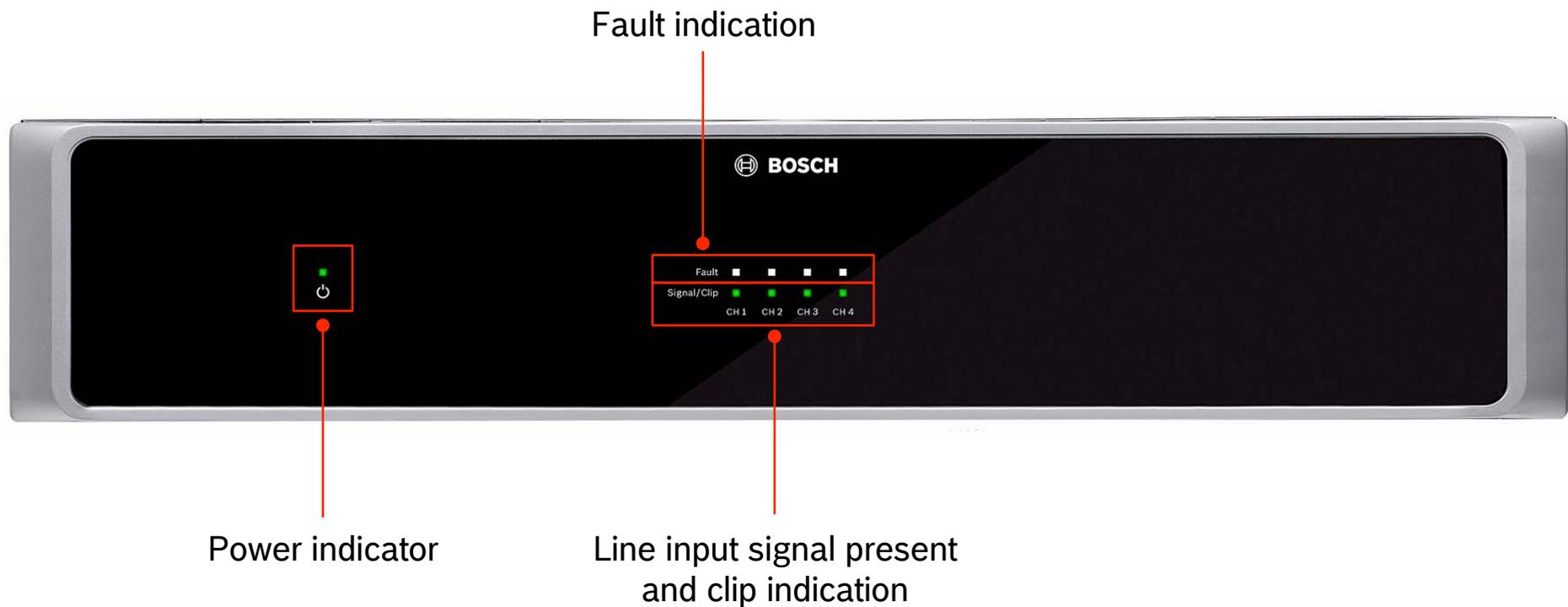→ Mute (all inputs and outputs)

Configuration features:

→ Input gain, HPF, +48 V

→ Input PEQ (5 filters mic/line)

→ Dynamic range compression/limiting

→ Crossover (HPF, LPF, up to 8th order)

→ Output PEQ (8 filters per output)

→ Dynamic Bass Enhancement on/off

→ Output delay (120 ms)

→ Output level control with phase inversion

→ Call Station setup and configurations

→ Ducking setup, override and tones setup

→ Security and user access control setup

→ Auto Standby mode setup

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PLM-4Px2x − DSP Power Amplifiers

➔ Front panel layout (no front panel controls)

Fault indication

Power indicator

Line input signal present
and clip indication

PLM-4P125 or PLM-4P220 DSP Power Amplifiers

→ Rear panel layout

4 x line inputs via XLR/TRS combo or
Euro-Phoenix connection

Power switch
and connector

Amplifier
channel outputs

Channel
attenuation

Amp Link
input

Ethernet
control port

Movement sensor/contact closure for
Auto standby and 12VDC power output

DIP Switch to control input
sensitivity and bridging

Active override input
and contact closure

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DSP Amplifier features:

→ 125 W or 220 W option

→ Class D technology

→ DSP feature set

→ Separate dedicated 4 Ω / 8 Ω/ 70 V/ 100 V on each output

→ Bridgeable outputs (1−2 / 3−4)

→ Loop out via the unused analog input connectors

→ Power ratings are consistent across all impedances

→ Standby / Auto Standby Mode

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Unique system features

Amp Link

→ Amp Link is a connection between the PLM-8M8 and the PLM-4Px2x amplifiers

→ This connection replaces the need to connect the units via the Euroblock/Phoenix connectors

→ High quality STP CAT5 cable is recommended

→ Maximum recommended cable distance is 5 m

→ If further distances are required Euroblock balance line connections are recommended

→ CAT5 cable is also used to power and daisy chain call stations and wall control panels

→ Standard connections reduce installation time and offer cost savings as well as providing a reliable, quality connection

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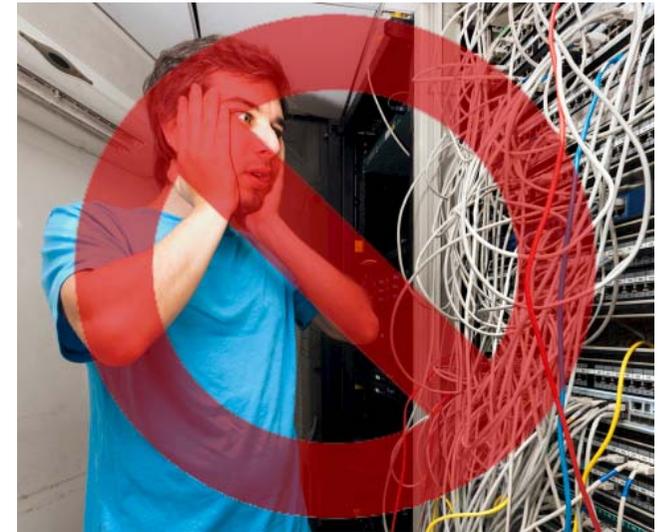
Unique amplifier features

Inbuilt Input Mixer

➜ Allows mixing of the 4 inputs to differen
  power amplifier channels

➜ Allows the amplifier to be installed star
  alone as an advanced and powerful
  mixer amp

➜ Input controls:
  - Trim
  - 7 filters (PEQ, HPF, LPF, Shelf)
  - Compressor/Limiter

➜ Output controls:
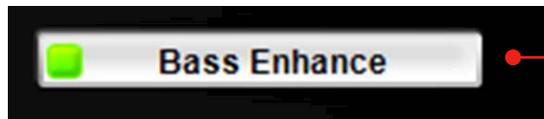 - 120 ms delay per channel

Unique amplifier features

Bass Enhance

➜ Dynamic low frequency enhancement for when areas are not running to nominal SPL

➜ Ensures that even at low SPL the system delivers excellent sound quality

➜ Automatically reduces to previous levels when nominal SPL is restored

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Unique amplifier features

Auto Standby mode

→ Switches the amplifiers into standby when zones are not in use

→ Reduces duty cycle on the power supply

→ Halves lifetime running costs

→ Reduces the environmental impact

→ Doubles product lifetime

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How does Auto Standby work?

➔ The amplifiers connect to Bosch motion detectors to sense movement within the zones

➔ If no movement is present the amplifier goes into a standby (low power) mode

➔ When someone enters the zone the amplifier 'wakes up' and restores previous settings

➔ The amplifiers provide 12 V power to run the sensors

➔ The system GUI Interface allows to set delays from 1 minute to 4 hours

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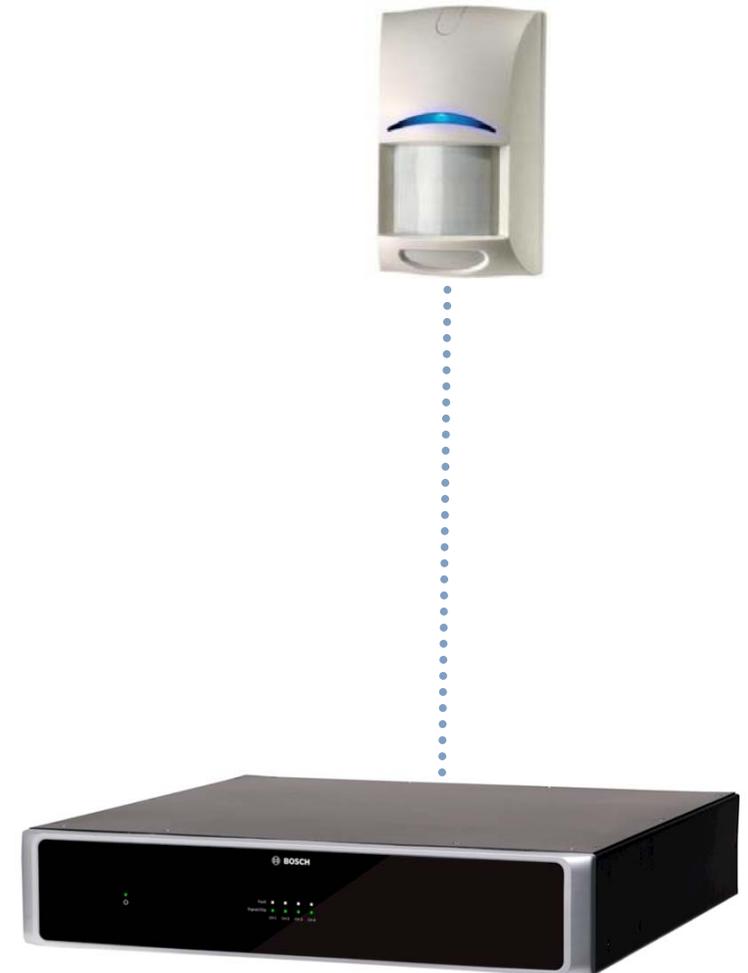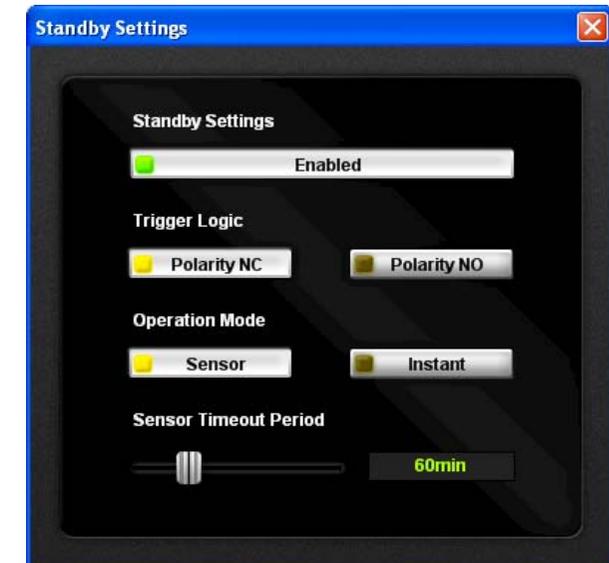
Running costs of amplifiers

The Auto-Standby feature of PLENA matrix can help a venue save up to 80% of its operational cost, as compared to a standard class AB amplifier. The savings achieved is equivalent to the annual cost of operating an entire amplifier.

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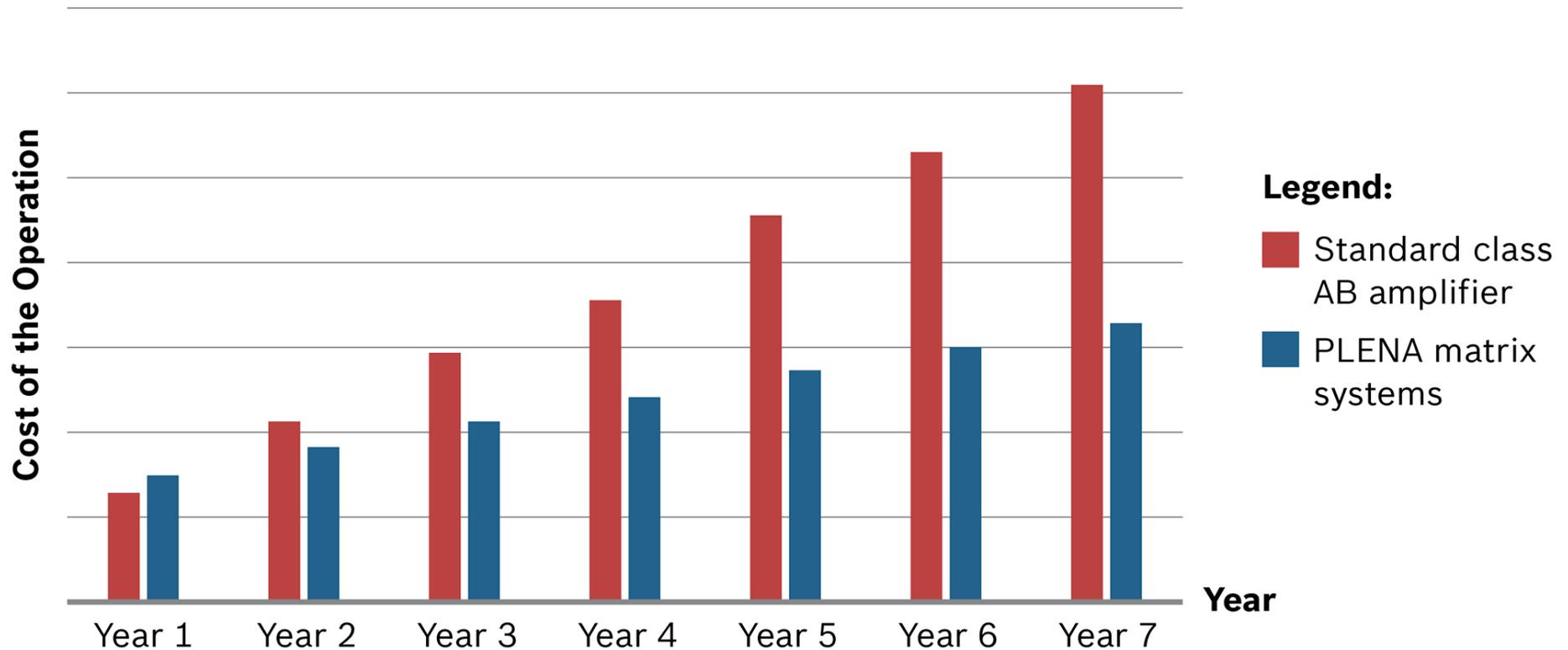
Other ways to activate Standby (no detectors)

→ The Standby mode can be triggered via;

- A simple contact closure (either NC or NO), for example daily timers and building management systems

- Ethernet open interface command, for example AMX, Crestron and similar

- By the **PLENA matrix** software interface

AMX

CRESTRON.

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Standby Settings

Standby Settings
Enabled

Trigger Logic
Polarity NC   Polarity NO

Operation Mode
Sensor   Instant

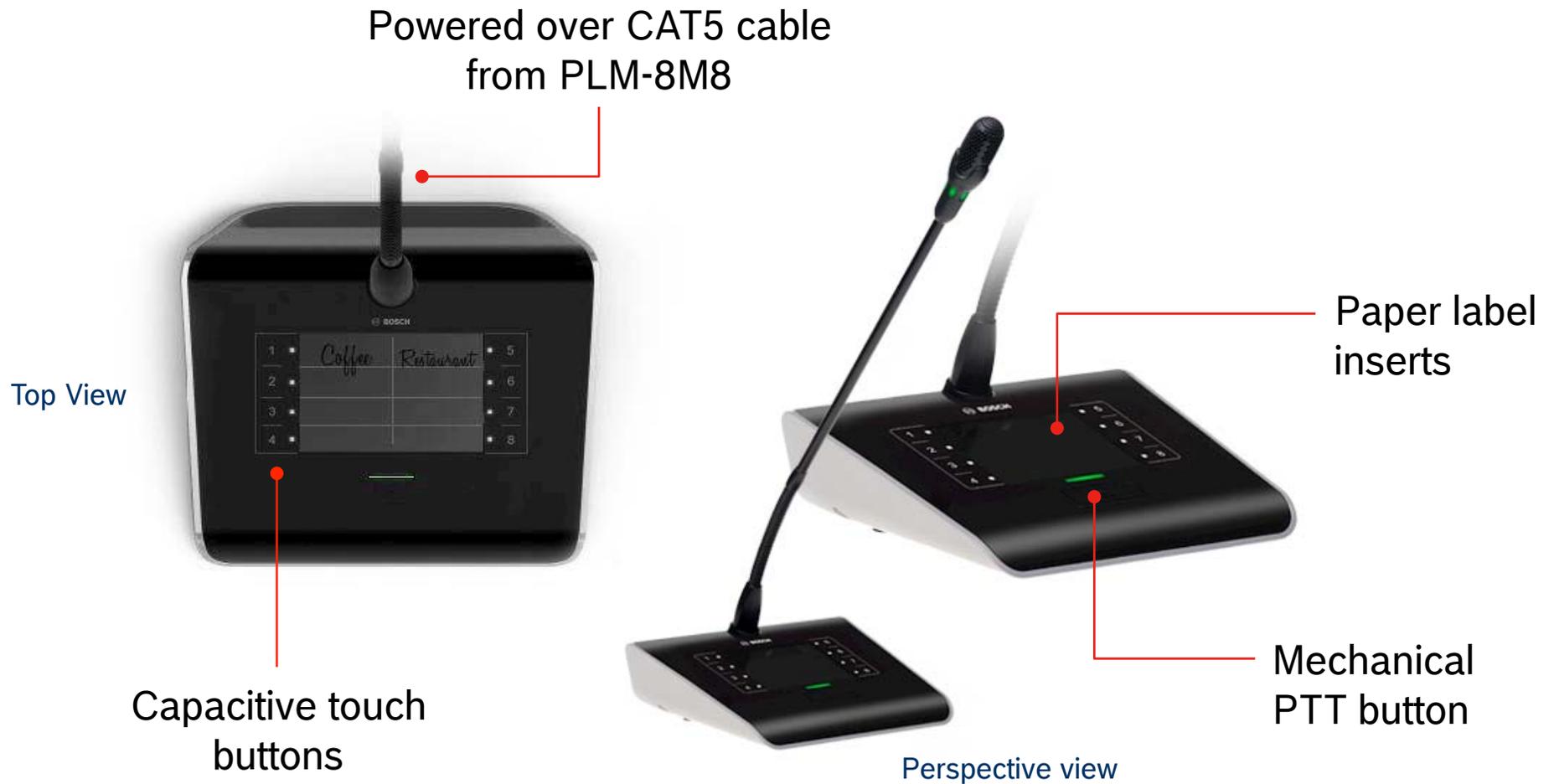**Sensor Timeout Period**
60min

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Why is Auto Standby important?

➔ 92% of venues that do not have AV staff, keep power amplifiers on 24hr a day 365 days a year

- Venue staff are not familiar with the equipment
- Venue staff have no access to the equipment
- Venue staff are afraid to operate the equipment
- It is too much hassle to turn the amps on and off every day

➔ Reduction in running costs, increase of product life, and being kinder to the environment are important purchase considerations

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Paging with: PLM-8CS Call Station

Powered over CAT5 cable
from PLM-8M8

Top View

Paper label
inserts

Capacitive touch
buttons

Mechanical
PTT button

Perspective view

Override and Emergency Tones

➜ **_Suitable for Australian occupant warning systems._**

➜ The tones for "EVAC" and "Alert" are activated by contact closures on the rear panel of only the PLM-8M8 DSP Matrix.

➜ The override is designed for use with a fireman's mic or other recorded announcement system that can close a contact trigger.

➜ The Override input is a balance input that is the highest priority in the unit. It will override all other inputs, announcements and tones to all zones globally.

➜ The Override balanced line input is activated by the contact closure labeled "Active".

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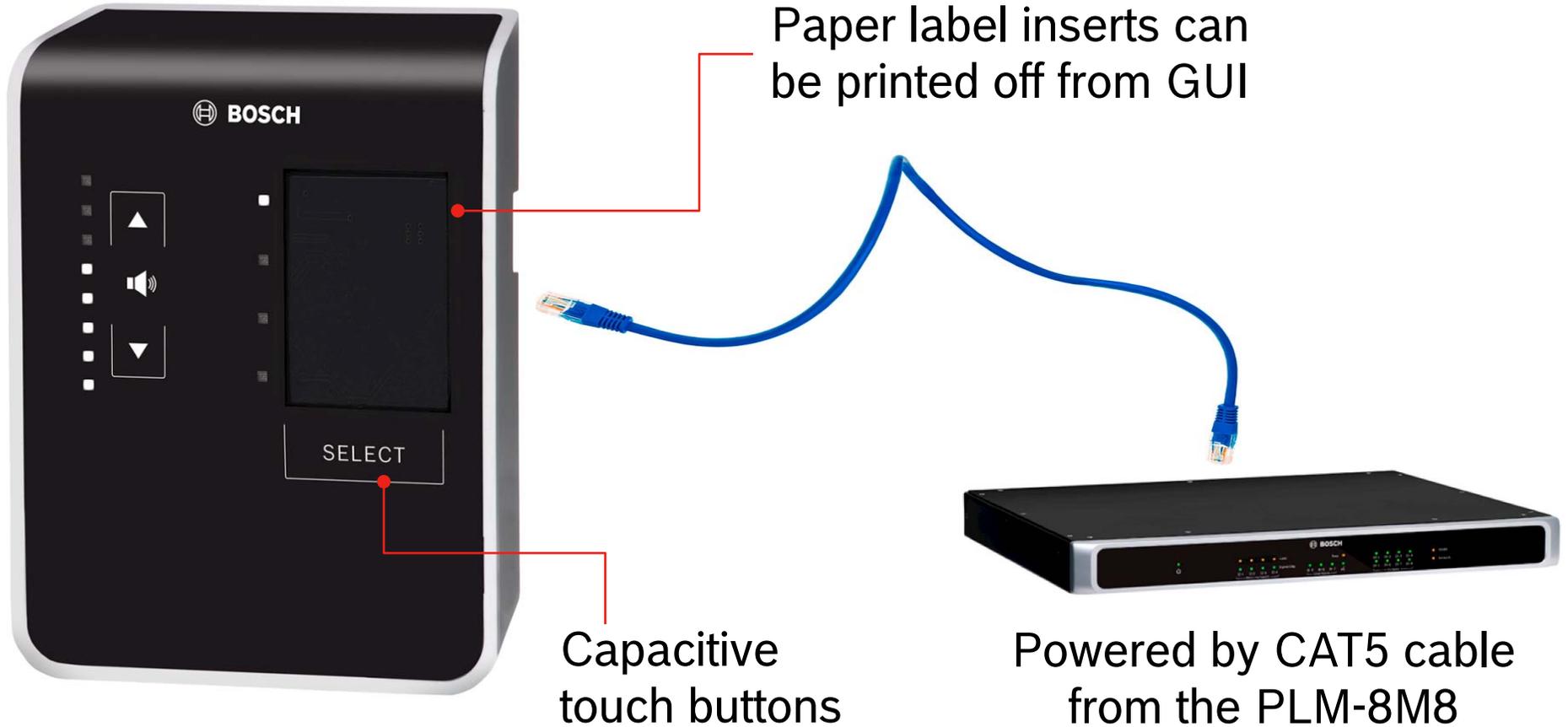
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3 levels of user control

➔ **Basic Everyday User** – Wall Control Panel
- For the user that only needs to adjust the volume or source in any one specific zone or area. For example, an instructor in a gym class.

➔ **Intermediate** – PC GUI and iOS App
- For users like a venue manager who needs control over volume, source and the ability to mix inputs into different zones using the PC GUI, or the wireless touch screen option on an iPad or iPhone.
- The features available on the interface screen can be tailored to the needs of the user by an administrator.

➔ **Advanced** – PC GUI Administrator
- For installers/integrators and system administrators who require access to all the features that the system offers including speaker processing.

Level 1: Basic Users

PLM-WCP Wall Control Panel

Paper label inserts can be printed off from GUI

Capacitive touch buttons

Powered by CAT5 cable from the PLM-8M8

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Level 2: Intermediate Users

Windows PC GUI (User page)

→ The ability to select a Zone and adjust any input within that zone

→ Designed for the end user intuitive interface

→ Real-time adjustments

→ Live metering input

→ Select input source

→ Adjust volume levels

→ Mute input

→ Mute zone

Level 2: Intermediate Users

iOS App: iPad, iPhone

→ iPad app has the same features as PC GUI software (user interface)

→ Wireless control over individual or multiple zones

→ Ideal for quick mobile system checks

→ Customized user access levels

→ When used in a fixed application (for example wall mounted) an iPad can also function as a BGM source unit

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Level 3: Advanced Users

Full-featured GUI software for the audio professional

➔ Provides the integrator and system admin with all the DSP configuration blocks

➔ Vast palette of tools to optimise every installation
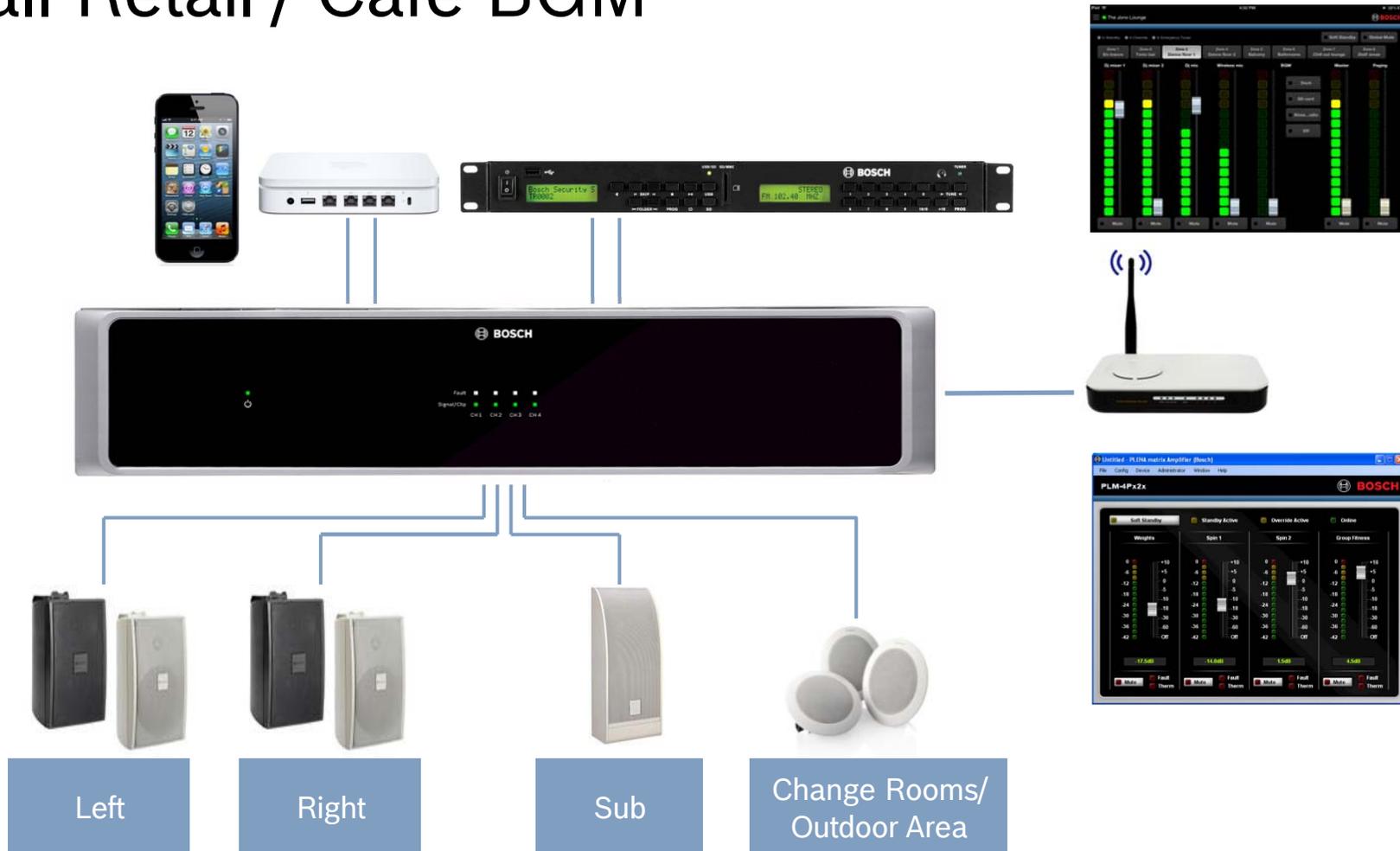
➔ Password protection to lock out 'enthusiastic helpers'

➔ Intuitive workflow for faster and easier system setup

➔ Familiar look and feel for audio installers/integrators

➔ Scene memory/library

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PLENA matrix system flexibility

→ Suitable for just about any small to medium venue requiring up to 8-zones of sound distribution.

→ Large venues can utilise multiple PLENA matrix systems (for example 2 x 8-zone systems).

→ The ability to use the Power Amplifiers (with a built-in DSP Mixer on their own) allows very cost efficient installs in smaller venues

→ The system allows adding on of components depending on the requirements.

→ Existing sound and paging components may be compatible with the PLENA matrix system to safeguard past investments.

→ The following pages show examples of PLENA matrix application schematics. Please note that each real application is bound to be unique and may require some level of customisation.

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Small Retail / Cafe BGM

| Left | Right | Sub | Change Rooms/ Outdoor Area |

Restaurant with a Jazz Trio and BGM

| Inside | Outside | Function room | Bathrooms |

Fitness Centre/Gym/Recreational Facility
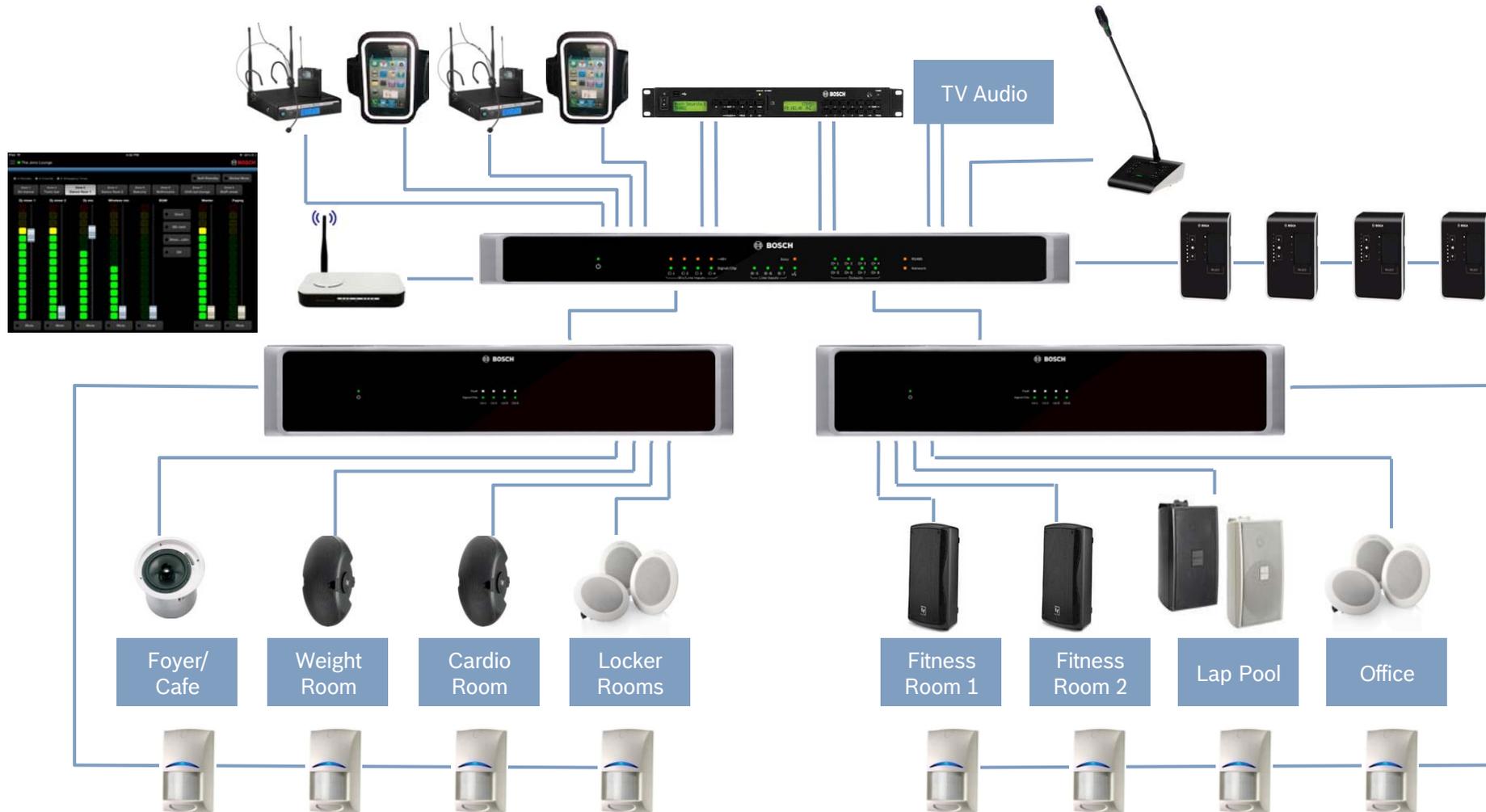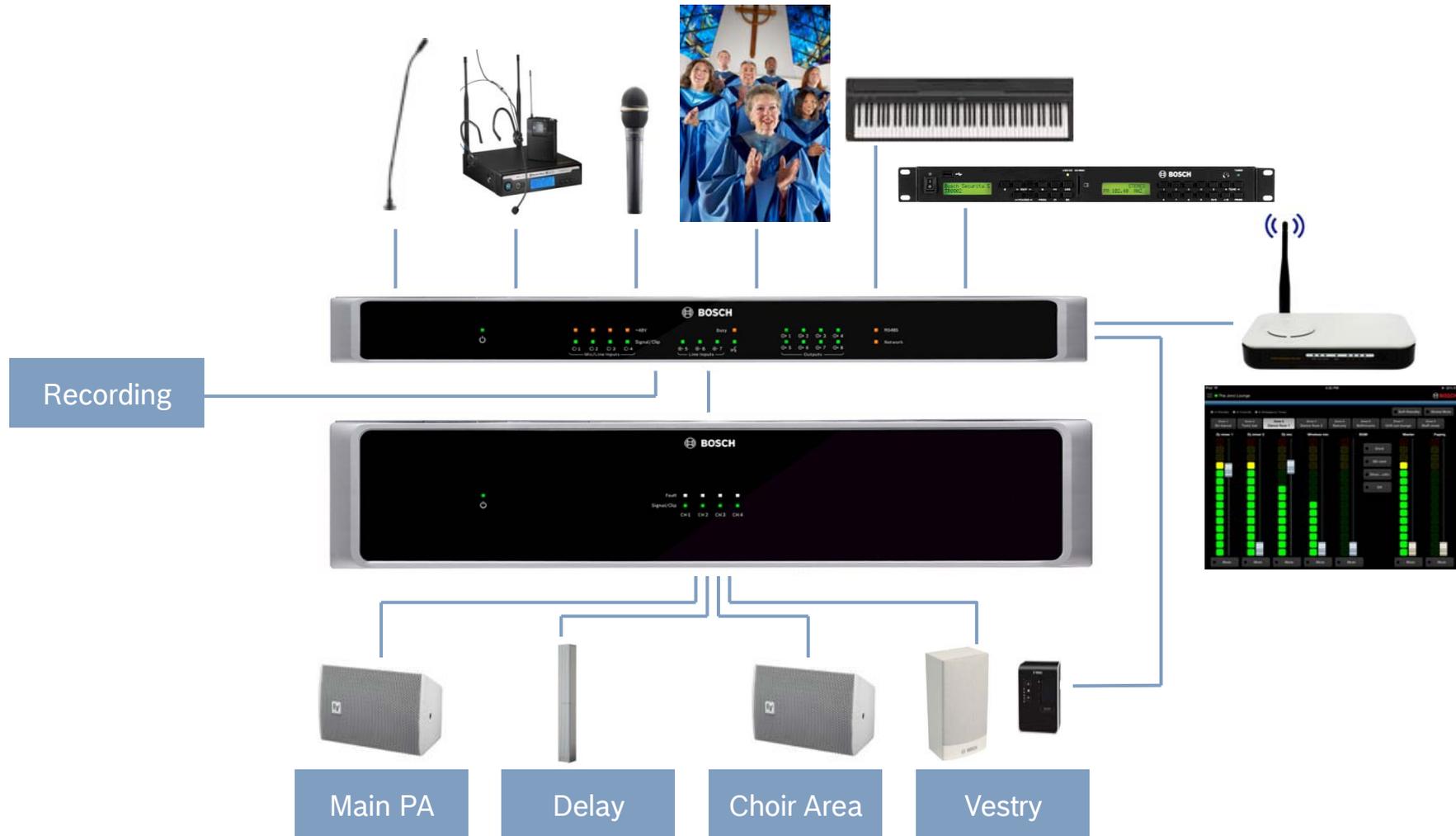
TV Audio

Foyer/Cafe | Weight Room | Cardio Room | Locker Rooms

Fitness Room 1 | Fitness Room 2 | Lap Pool | Office

Small Church

Recording

Main PA

Delay

Choir Area

Vestry

Mid-sized Church (A)

Main Auditorium Left	Main Auditorium Right	Balcony Delay	Under Balcony Delay	Mothers Room	Overflow	Foyer + Cafe	Sunday School Room 1	Sunday School Room 2	Offices + Bathrooms

Mid-sized Church (B)

| Main Auditorium Left | Main Auditorium Right | Balcony Delay | Under Balcony Delay | Mothers Room | Overflow | Foyer + Cafe | Sunday School Room 1 | Sunday School Room 2 | Offices + Bathrooms |
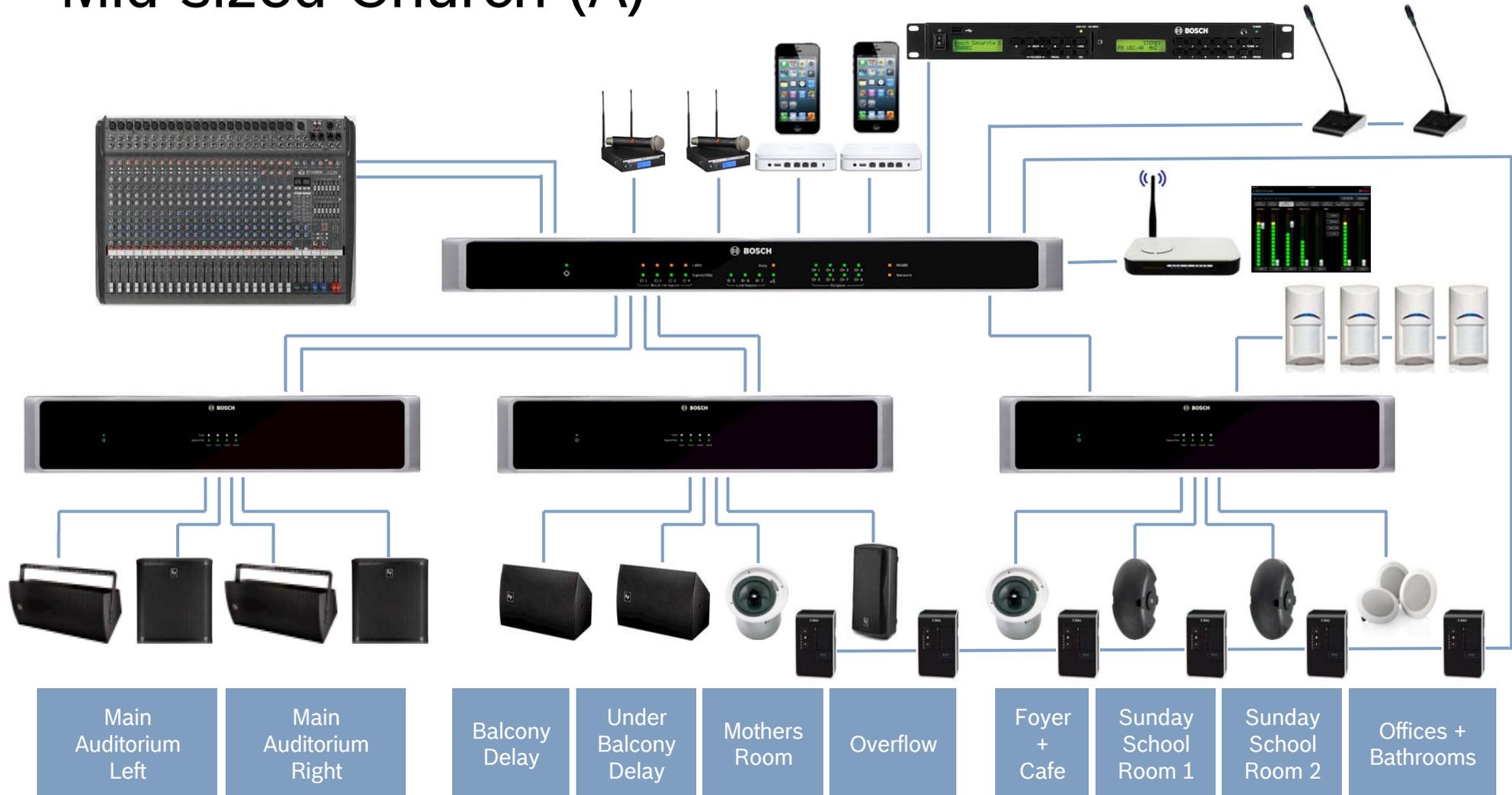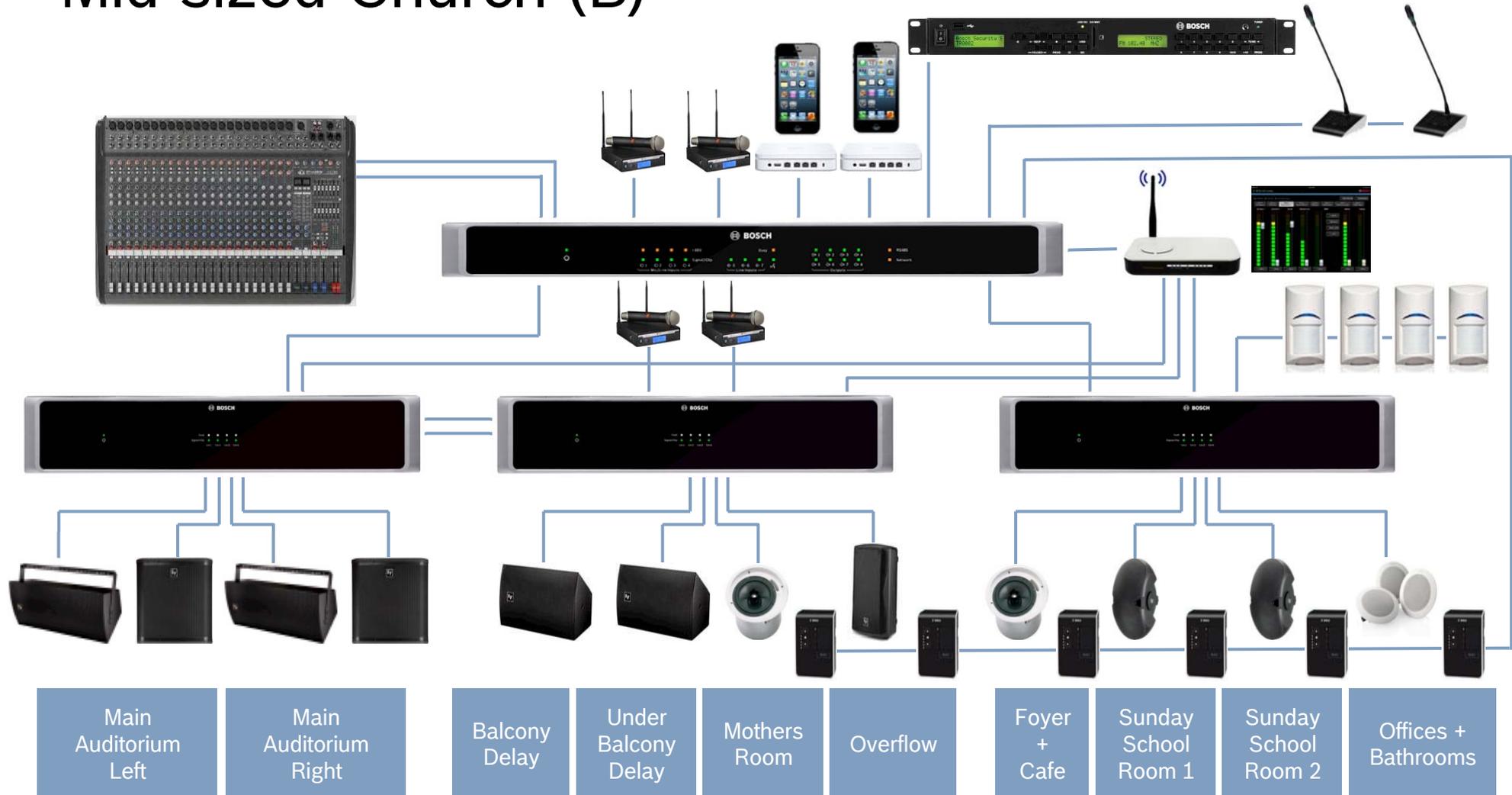
Mosque
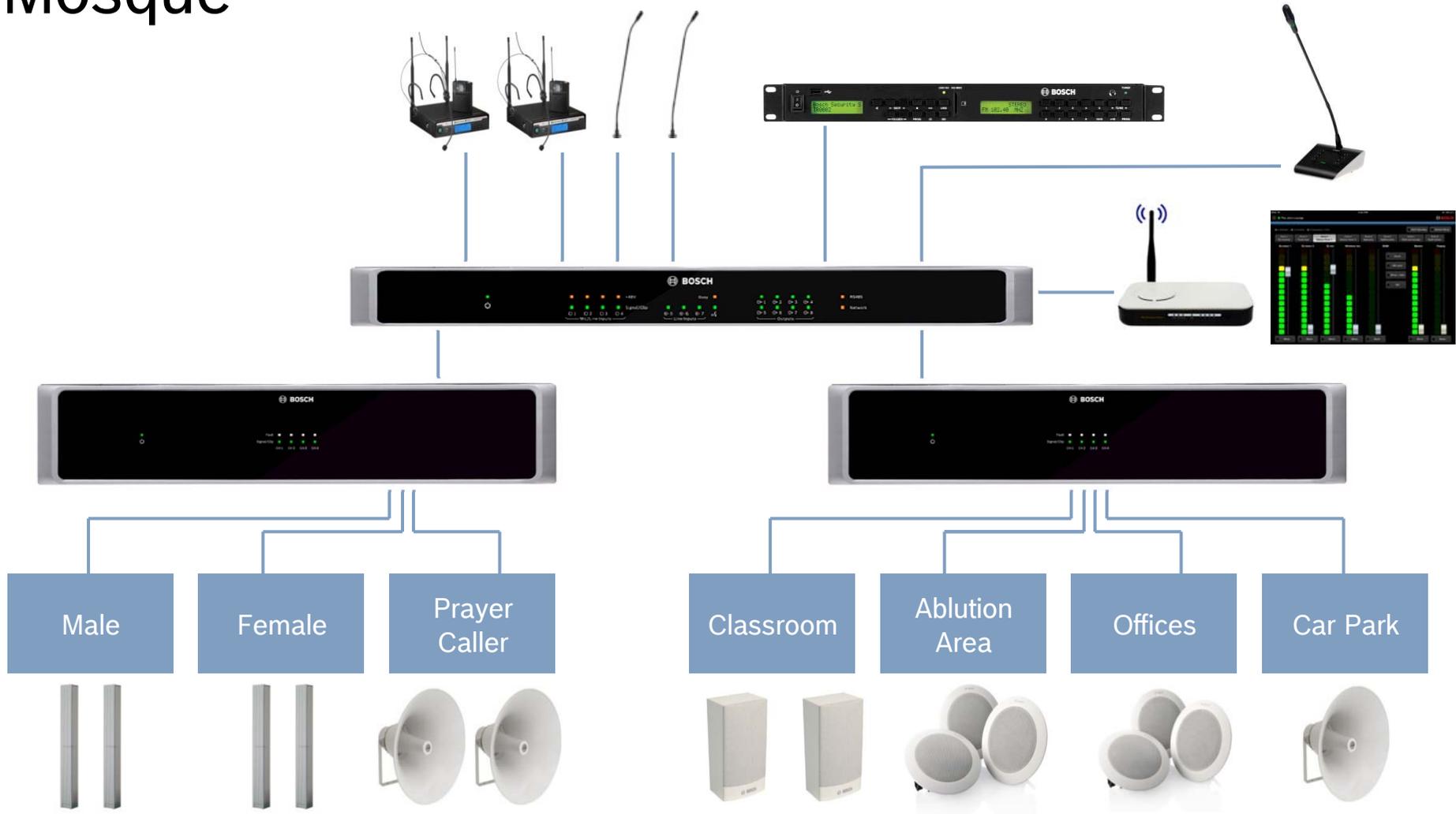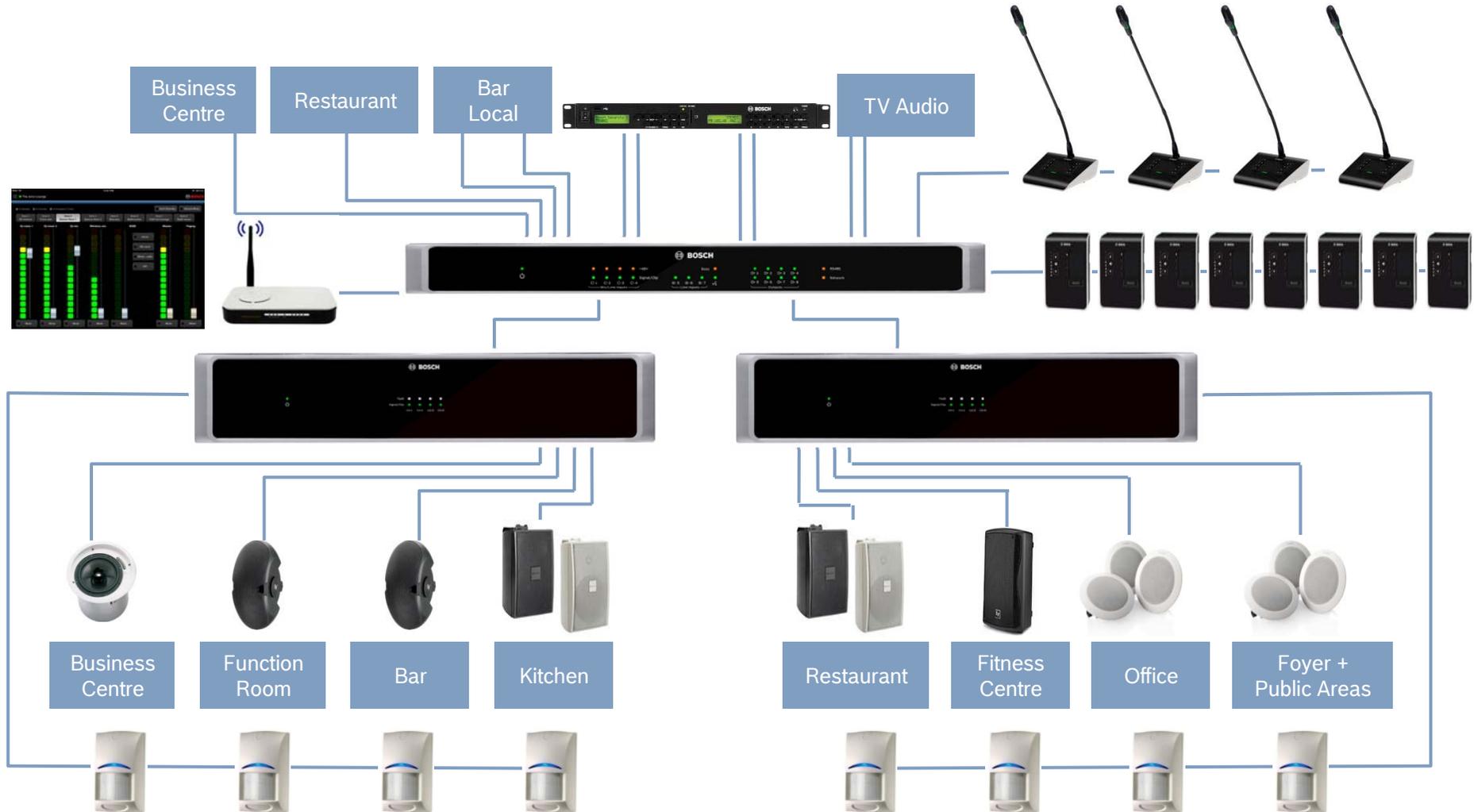
Hotel

Live Music Bar inside a bigger venue (e.g. hotel)
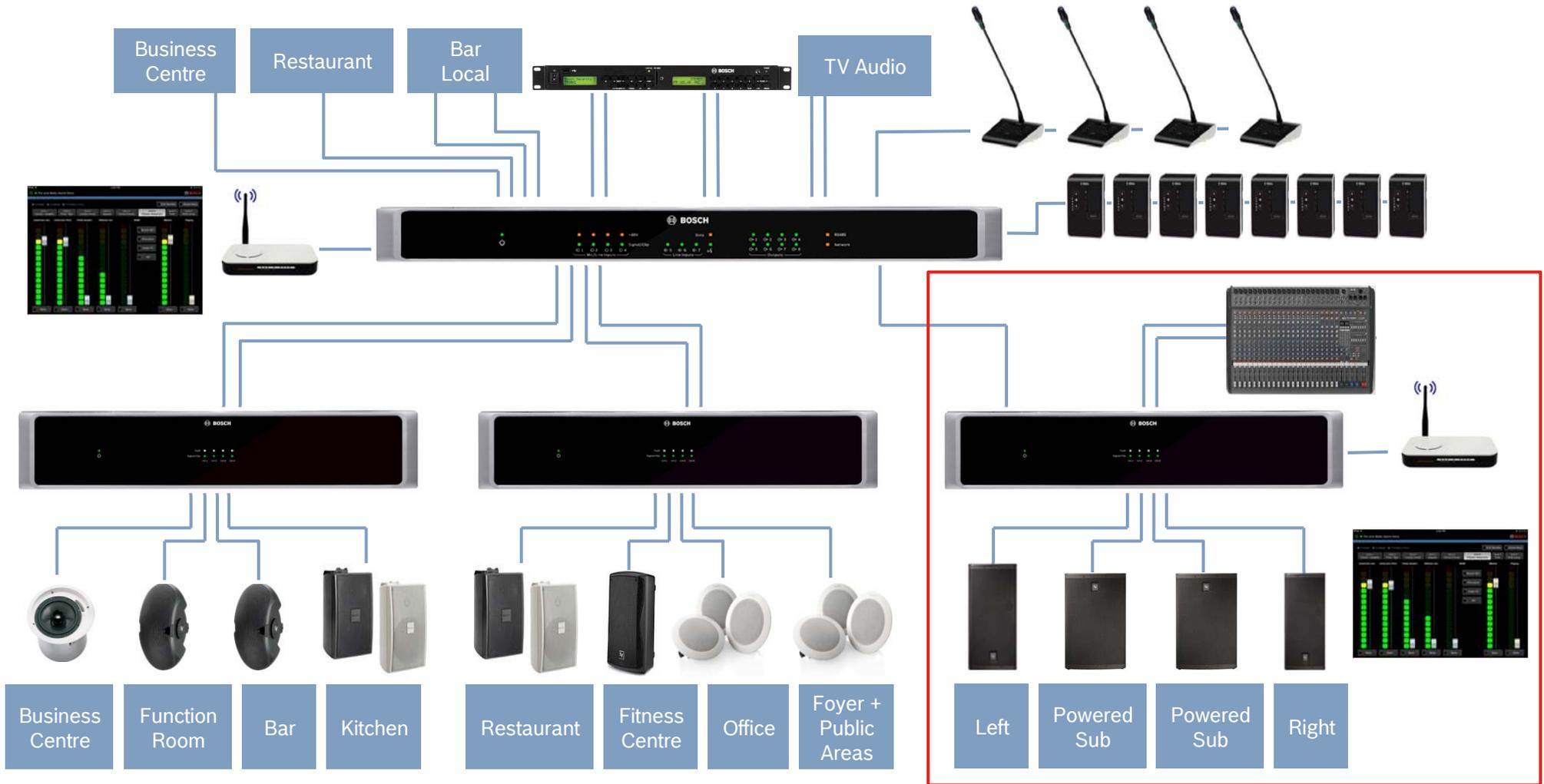
Conference/ Government

| Main Room | Gallery | Break-out Areas | Bathrooms |

Single system Simultaneous controls

➔ 16 Wall Control Panels can be daisy chained over 500 m of UTP cabling

➔ Wall Control Panels with same ID can be used for multiple controls in one zone

➔ 5 PC GUIs can be used simultaneously

➔ 8 iOS GUIs can be used simultaneously
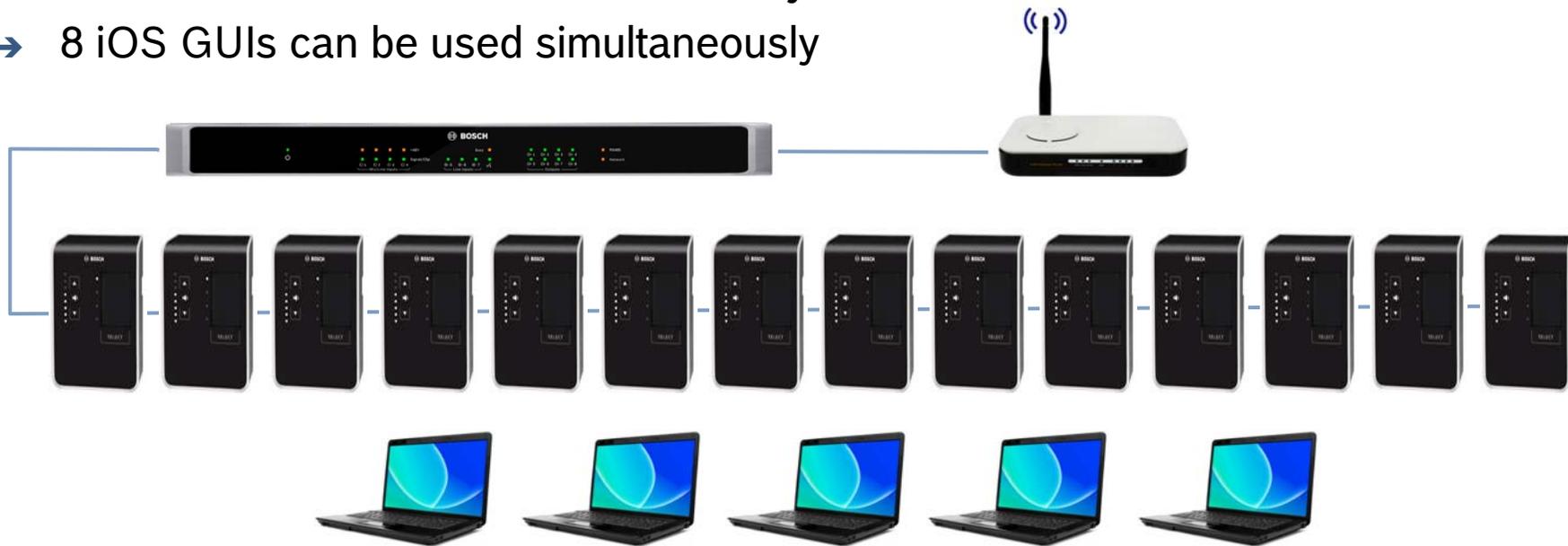
Multiple systems, single control

➔ For large venues where multiple PLENA matrix Systems are used, the DSP Matrix Mixers/Processors can be controlled by one PC
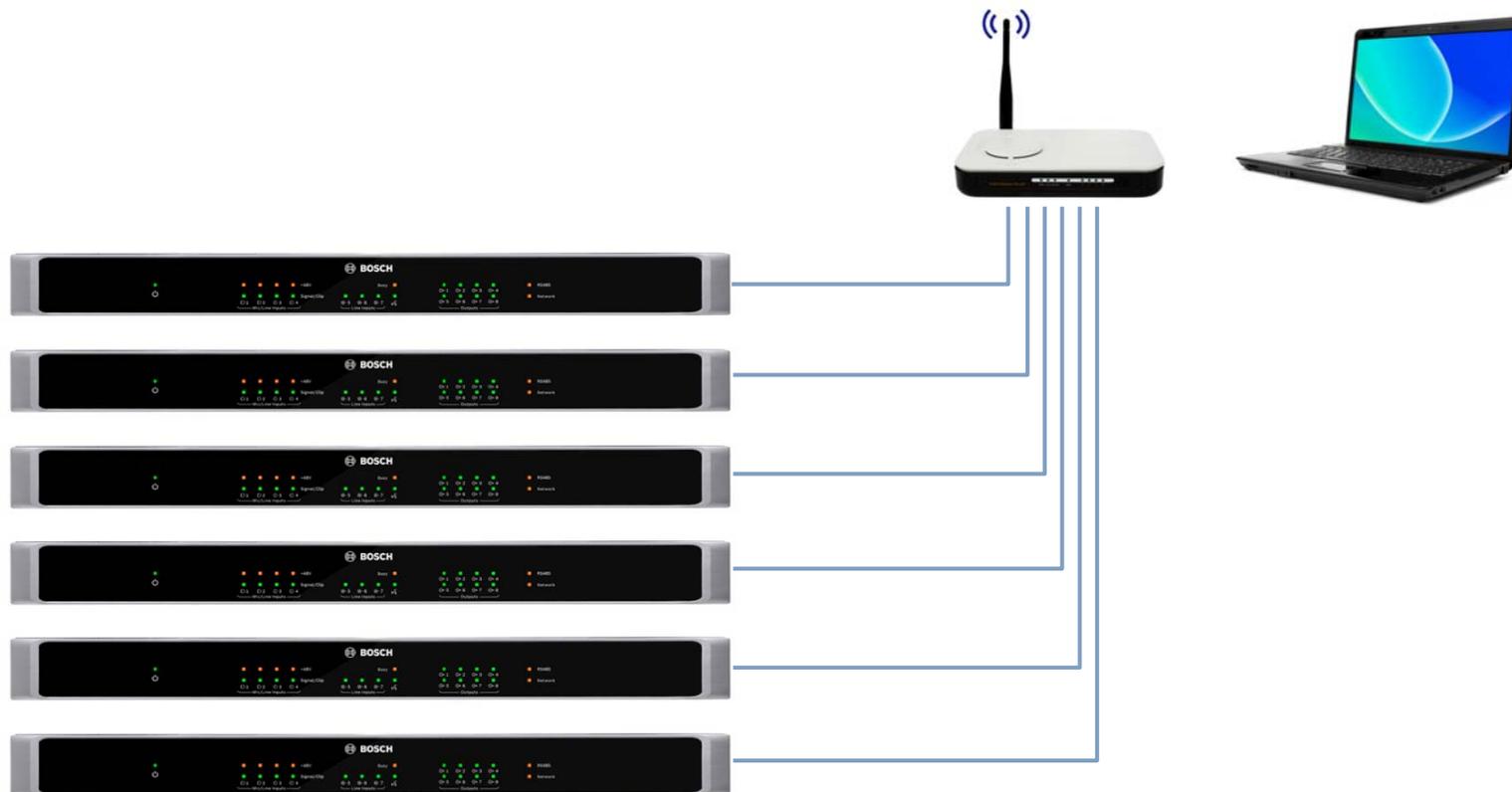
Summary

→ Ideal for any small-medium, up to 8-zone installation

→ High-performance sound at an affordable price

→ Ideal for quality EV, Dynacord and Bosch speakers

→ Full-featured 8x8 DSP Matrix Mixer/Processor

→ Choice of 125 or 220 W 4-channel DSP Power Amps

→ 8-Zone Call Station and Wall Panel Controllers

→ Powerful yet easy to use PC GUI for installers/integrators

→ iOS App for iPad and iPhone for wireless zone control

→ Amp Link and CAT5 connections for all components to dramatically reduce cable runs and installation time

→ Auto Standby Mode to half running costs and double product lifetime

→ Powerful control, great system flexibility, amazing performance and great value for money

Contacts and more information:

- → **PLENA matrix inquiries**

- → **For system configuration advice**

- → **Setting up a Bosch account**

CONTACT:

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