Plena BGM/Paging System

Installation and Operating Manual

en LBB 1970

BOSCH

Important safeguards

1 Read instructions - All the safety instructions for use should be read before the system is operated.
2 Retain instructions - The safety instructions and instructions for use should be retained for future reference.
3 Heed warnings - All warnings on the unit and in the operating instructions should be adhered to.
4 Follow instructions - All operating instructions and instructions for use should be followed.
5 Cleaning - Unplug system units from the mains outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
6 Attachments - Do not use attachments not recommended by the product manufacturer as they may cause hazards.
7 Water and Moisture - Do not use this unit near water, for example near a bathtub, washbowl, kitchen sink, or laundry basket, in a wet basement, near a swimming pool, in an unprotected outdoor installation or any area which is classified as a wet location.
8 Accessories - Do not place this unit on an unstable stand, tripod, bracket or mount. This unit may fall, causing serious injury to a person and serious damage to the unit. Use only a stand, tripod, bracket or mount recommended by the manufacturer, or sold with the product. Any mounting of the unit should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
9 Ventilation - Openings in the enclosure, if any, are provided for ventilation and to ensure reliable operation of the unit and to protect it from overheating. These openings must not be blocked or covered. The unit should not be placed in a built-in installation unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10 Power sources - Units should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply you plan to use, consult your appliance dealer or local power company. For units intended to operate from battery power, or other sources, refer to the "Installation and User Instructions".
11 Grounding or polarisation - This unit may be equipped with a polarised alternating current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarised plug. Alternatively, this unit may be equipped with a 3-wire grounding type plug having a third (grounding) pin. This plug will only fit into a grounding-type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding-type lug.

12 Power-Cord Protection - Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
13 Overloading - Do not overload outlets and extension cords as this can result in a risk of fire or electrical shock.
14 Object and Liquid Entry - Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the unit.
15 Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
16 Damage Requiring Service - Unplug the unit from the outlet and refer servicing to qualified service personnel under the following conditions:
   • When the power-supply cord or plug is damaged.
   • If liquid has been spilled, or objects have fallen into the unit.
   • If the unit has been exposed to rain or water.
   • If the unit does not operate normally by following the instructions for use. Adjust only those controls that are covered by the instructions for use, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the units to their normal operation.
   • If the unit has been dropped or the unit has been damaged.
   • When the unit exhibits a distinct change in performance; this indicates a need for service.
17 Replacement Parts - When replacement parts are required be sure the service technician has used replacement parts specified by the manufacturer or parts which have the same characteristics as the original part. Unauthorised substitutions may result in fire, electric shock or other hazards.
18 Safety Check - Upon completion of any service or repairs to the units, ask the service technician to perform safety checks to determine that the unit is in proper operating condition.
19 Lightning - For added protection of the units during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the cable system. This will prevent damage to the unit due to lightning and power-line surges.

About this manual

This manual provides all the information required to install and operate the unit.

Conventions

⚠	**Warning** Follow these instructions to prevent personal injury.

⚠	**Caution** Follow these instructions to prevent damage to the equipment.

ℹ	**Note** Read these instructions for tips and other useful information.

Safety precautions

⚠	**Warning** Do not open the unit when it is connected to the mains. The unit contains non-insulated parts, which can cause electric shock.

⚠	**Caution** There are no user-serviceable parts inside the unit. Service must be done by qualified personnel.

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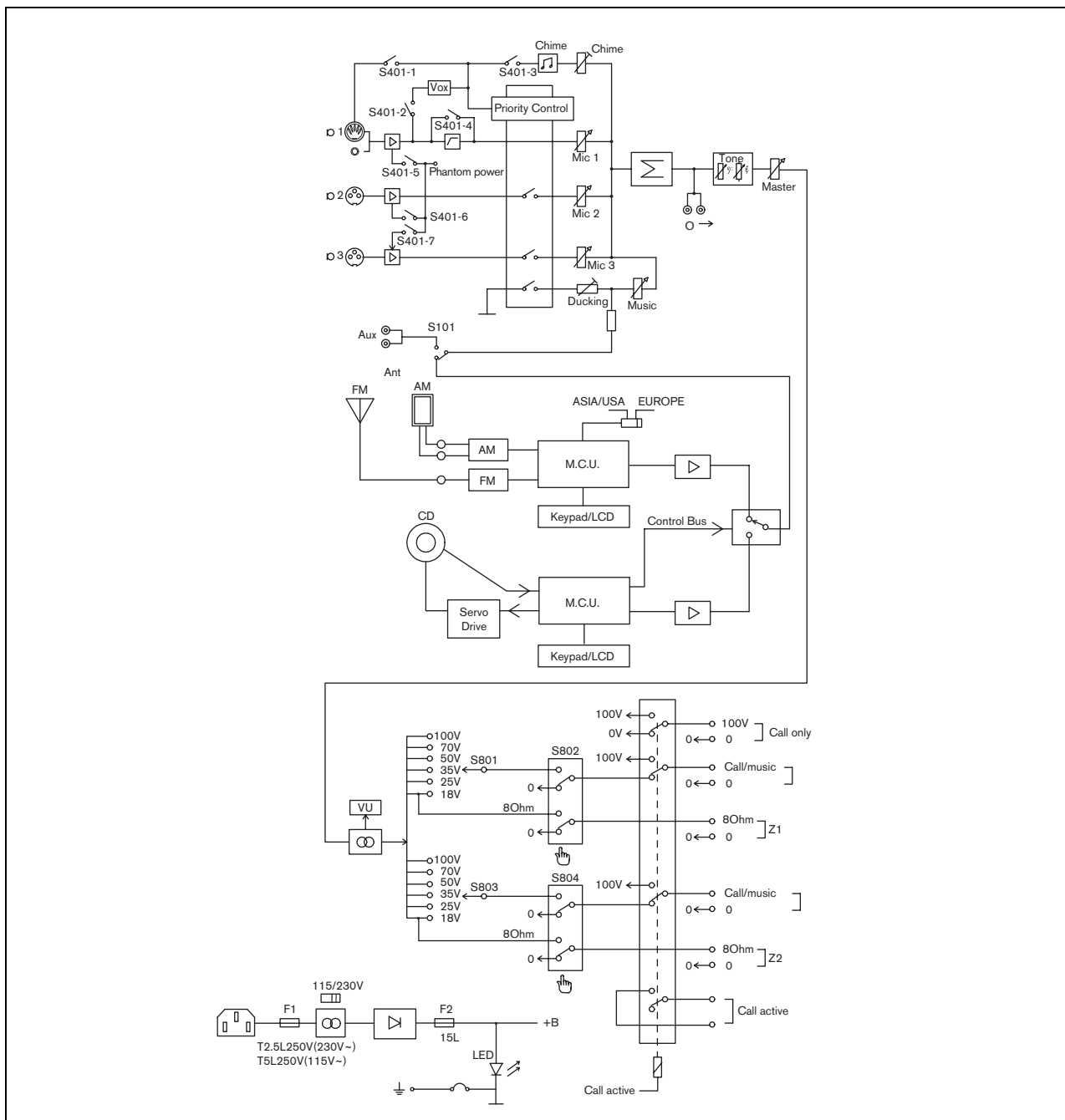
1   About the equipment

Figure 1.1

The Plena BGM/Paging System is the all-in-one solution for making announcements, paging people and play background music (BGM). It comprises an integrated 120 W mono mixer amplifier, a CD-player that can play normal audio-CD's as well as long play MP3-encoded CD's and a digitally controlled AM/FM-tuner for accurate capture of radio stations. Up to three microphones and an auxiliary source signal can be connected to the mixer amplifier and mixed, with priority or VOX switching available for the main microphone. The output signal can be switched to two different zones with individual attenuation control. A third zone receives only priority calls and no music.
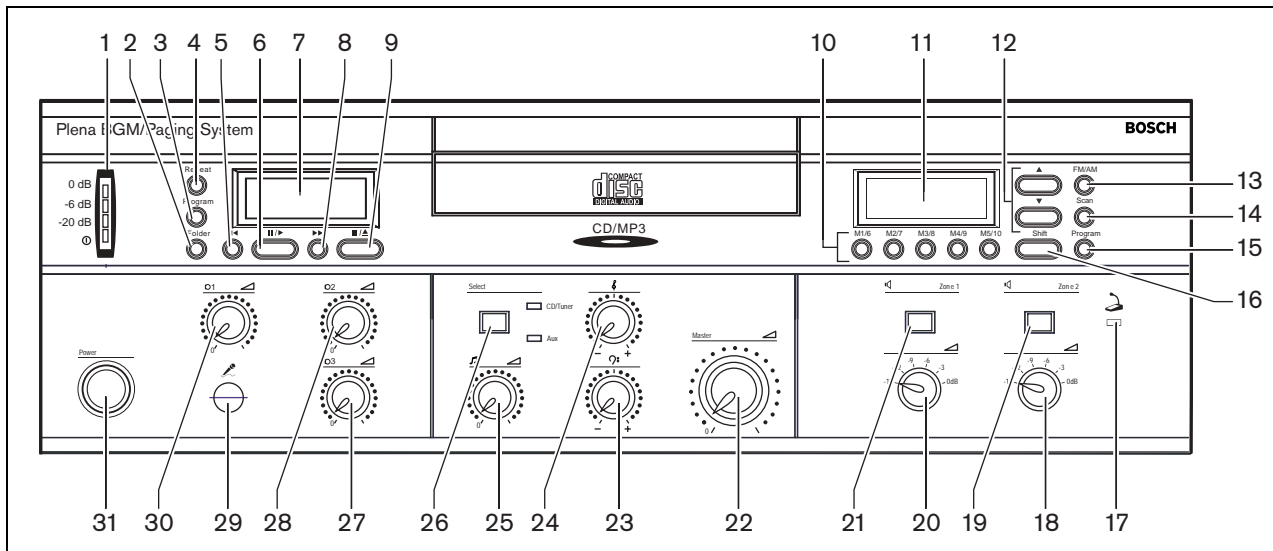
1.1   Controls and connections (front)

Figure 1.2

1 VU-meter (LED's for -20, -6, 0 dB and Power ON)
2 CD MP3 folder selection key
3 CD program key for track selection
4 CD repeat key
5 CD previous key
6 CD pause/play key
7 CD display
8 CD next key
9 CD stop/eject key
10 Tuner memory keys 1-5 and 6-10
11 Tuner display
12 Tuner frequency up/down keys
13 Tuner FM/AM selection key
14 Tuner scan key
15 Tuner program key
16 Tuner shift key to select memory 1-5 or 6-10

17 Microphone 1 priority active LED
18 Output attenuator for zone 2
19 Zone 2 selection button
20 Output attenuator for zone 1
21 Zone 1 selection button
22 Master volume control
23 Tone control (bass)
24 Tone control (treble)
25 Music source volume control
26 Music source selection button (CD/tuner - Aux)
27 Microphone 3 volume control
28 Microphone 2 volume control
29 Microphone 1 input (6.3 mm phone jack socket/ balanced)
30 Microphone 1 volume control
31 Power on/off

1.2 Controls & connections (rear)
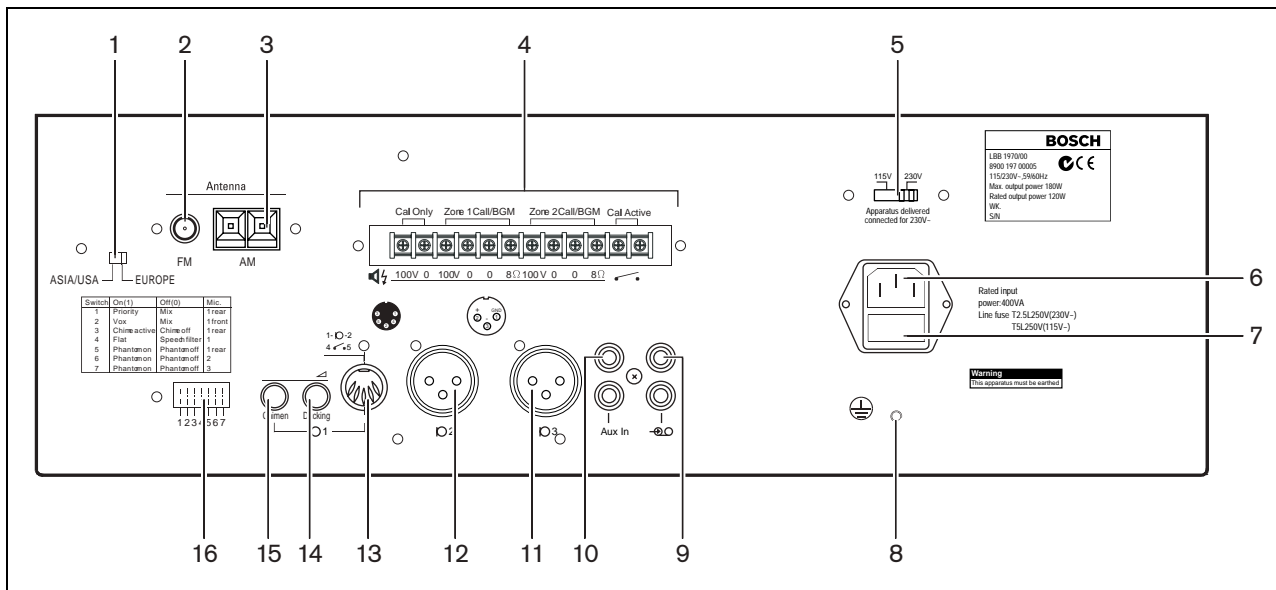
Figure 1.3

1   Tuner region selection (ASIA/USA or EUROPE)
2   FM antenna input
3   AM antenna input
4   Loudspeaker output terminal strip
5   Mains voltage selection
6   Mains connection
7   Mains fuse
8   Earth connection screw

9   Tape output (for 2x Cinch-connectors)
10 Auxiliary input (for 2x Cinch-connectors)
11 Microphone 3 input (for XLR-connector)
12 Microphone 2 input (for XLR-connector)
13 Microphone 1 input (for 5-pin DIN-connector)
14 Ducking level control
15 Chime level control
16 Configuration switches (1-7)

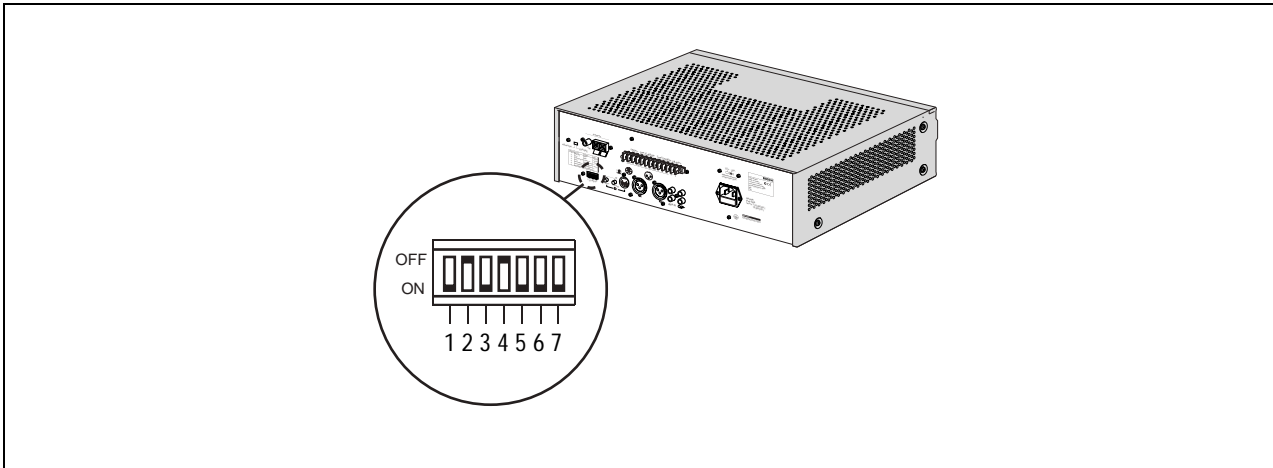# 2 Internal settings with the help of the configuration switches

Figure 2.1

| Switch	ON (1)	OFF (0)	Microphone	Function
1	Priority	Mix	1 (rear)	Selects whether microphone 1, connected to the rear DIN-socket, will have priority over microphones 2 and 3 and the background music. This will mute these microphones and the music and will also override zone switching and zone attenuation. Closing contacts 4 and 5 will activate priority.
2	Vox	Mix	1 (front)	Selects whether microphone 1, connected to the front 6.3 mm phone jack socket, will be VOX activated. As VOX activated microphone, microphone 1 will attenuate the background music or microphones 2 and 3 to a preset ducking level as long as you speak into the microphone.
3	Chime active	Chime off	1 (rear)	Selects whether a chime signal will precede a priority call, started by microphone 1, upon closure of contacts 4 and 5 of the rear DIN-socket. Additionally, the chime level control allows for setting the volume of the chime.
4	Flat	Speech filter	1	Selects a flat frequency response for microphone 1 or activates a speech filter, that improves intelligibility by attenuating the low frequencies.
5	Phantom on	Phantom off	1 (rear)	Switches the phantom power supply for microphone 1 (DIN-connection only). Phantom power should be switched on for condenser or electret microphones (e.g. LBB 1950) and switched off for dynamic microphones.
6	Phantom on	Phantom off	2	Switches the phantom power supply for microphone 2.
7	Phantom on	Phantom off	3	Switches the phantom power supply for microphone 3.

3   Installation
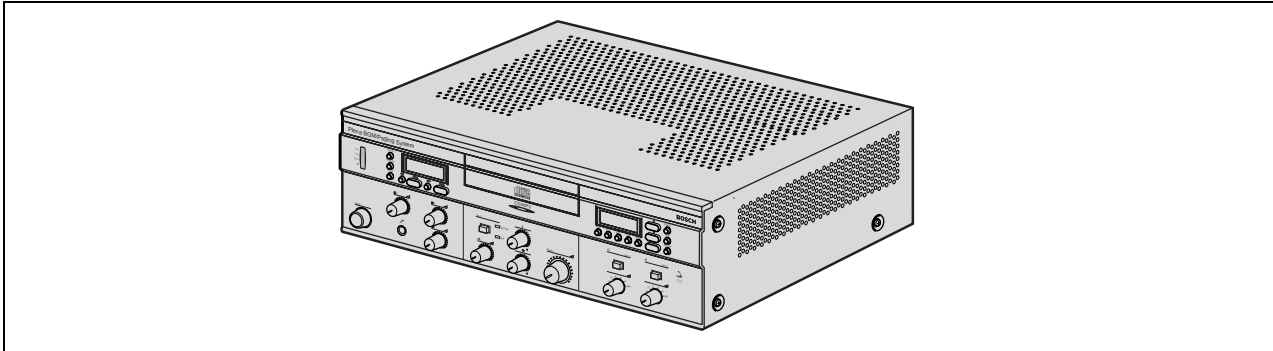
Figure 3.1

Carefully peel off the protective plastic film on both displays. Do not use sharp or pointed objects in order to avoid scratches. Use your fingernails instead.

The BGM/paging system unit is intended for table-top use. It can also be put on a shelf, provided that there is a free space of at least 10 cm on both sides of and above the unit to ensure proper ventilation. The unit has a built-in fan that will switch on when the temperature inside the unit rises. Do not put any other equipment directly on top of this unit. The ambient temperature should not exceed 45 °C. Mounting of the unit in 19"-racks is not recommended as often the temperature in these racks will exceed 45 °C.

4   External settings and connections
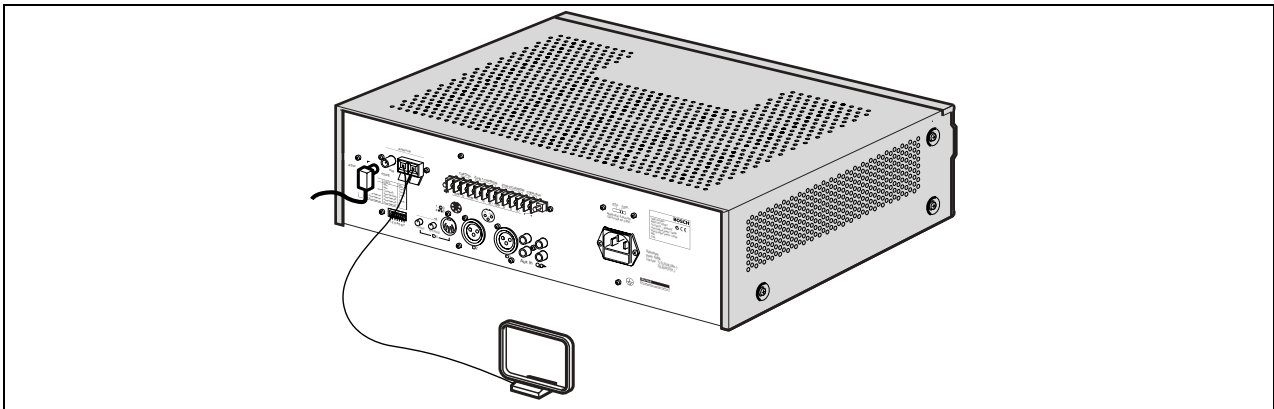
4.1   Connect antennas

Figure 4.1

The FM input must be connected to an antenna or cable network with a COAX cable of 75 Ohm. A connector for the FM input is provided with the unit. The AM input can be connected to the loop-antenna delivered with the unit.
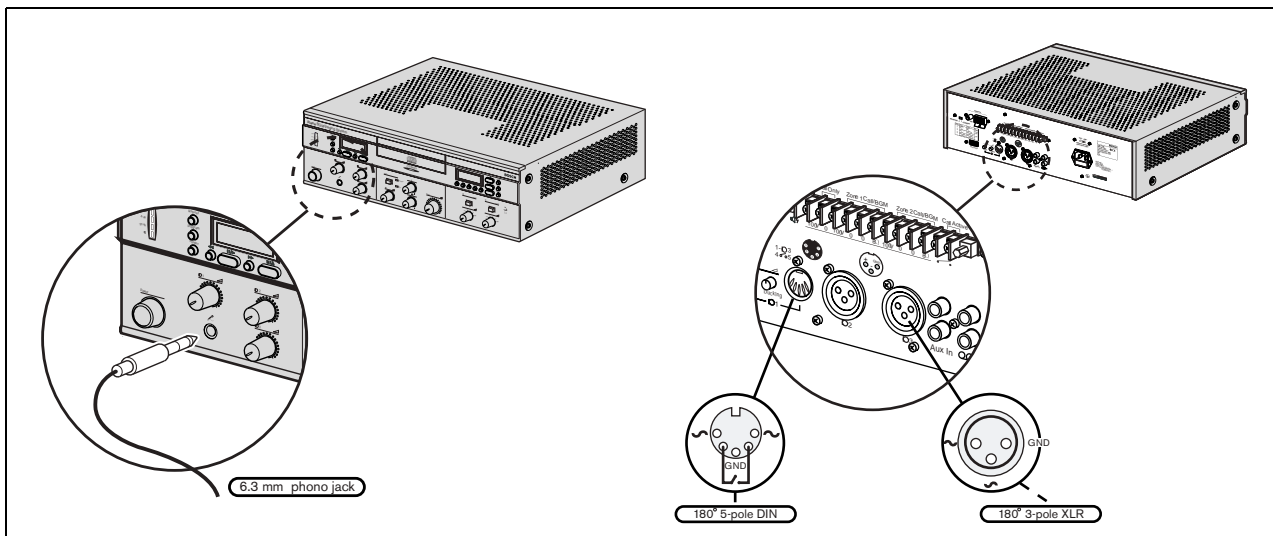
4.2 Priority/VOX activated microphone

Figure 4.2

Microphone 1 has different operating modes:

Priority mode:
Connect the microphone to the DIN-socket at the rear of the unit and enable the priority mode with configuration switch 1 (set to ON-position). This requires a microphone with a priority switch on contacts 4 and 5 of the 5-pin DIN-connector, such as the table-top microphone LBB 1950. In this mode, microphone 1 will have priority over microphones 2 and 3 and the background music. Activating this microphone will mute the other microphones and the music and will also override zone switching and zone attenuation. Priority announcements will even be heard in deselected zones. This mode is normally used for important (emergency) announcements. You can select a chime signal to precede such a priority call with configuration switch 3, a speech filter with configuration switch 4 and phantom power with configuration switch 5.

VOX mode:
Connect the microphone to the phone jack socket at the front of the unit and enable the VOX mode with configuration switch 2 (set to ON-position). This mode will attenuate the background music or microphones 2 and 3 to a preset ducking level as long as you speak into the microphone. It is normally used with handheld microphones like the LBC 2900/15 for making casual announcements, temporarily surpressing the music. Background music and announcements will be heard in the selected zones. The front connection for microphone 1 does not have phantom power for electret or condenser microphones, so a dynamic microphone must be used. A chime is not available in this mode, but you can select the speech filter via configuration switch 4.

When no priority or VOX mode has been selected, microphone 1 will just mix with the background music or the other microphones to the selected zones.

4.3 Microphones 2 and 3, auxiliary inputs and tape output
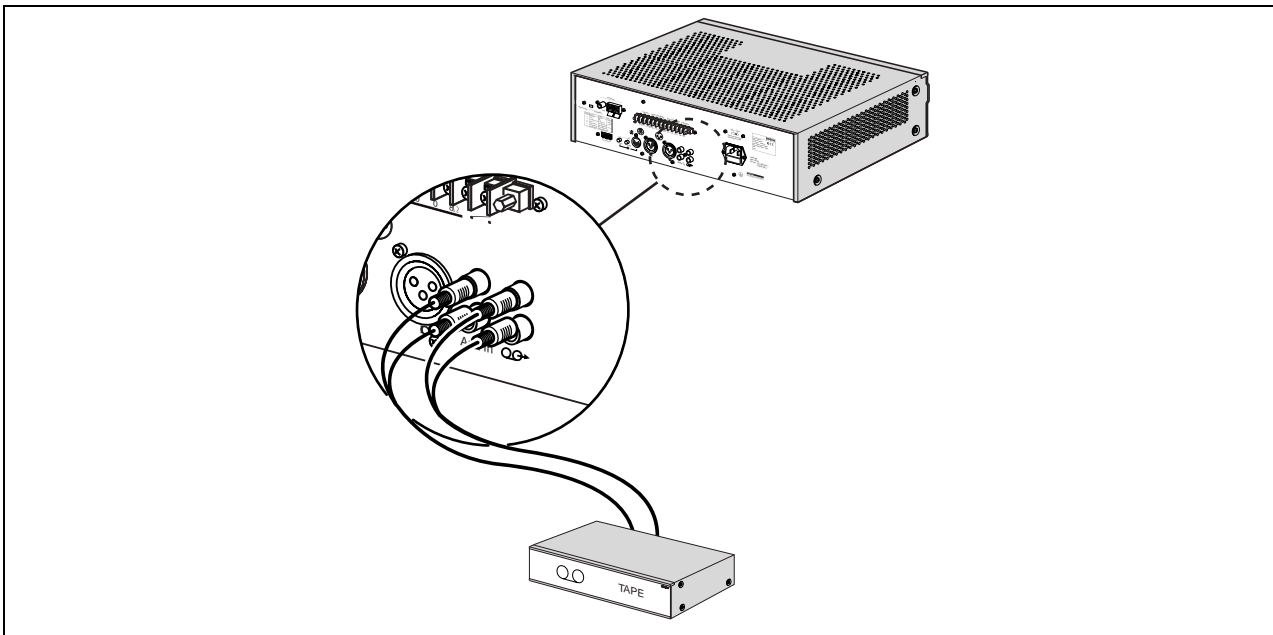
Figure 4.3

- Connect microphones 2 and 3 to the rear XLR-sockets. Enable phantom power for these microphones with configuration switches 6 and 7, if you use electret or condenser microphones. These microphones just mix with the background music.
- Connect an auxiliary music source, like a tape/cassette recorder or the audio signal of a DVD player, to the auxiliary Cinch-sockets on the rear. Stereo signals will be converted to mono.
- The tape output sockets may be used for connection to a tape/cassette recorder to record microphone and background music signals. Both sockets provide the same mono signal.

4.4 Loudspeakers

Figure 4.4

Figure 4.5

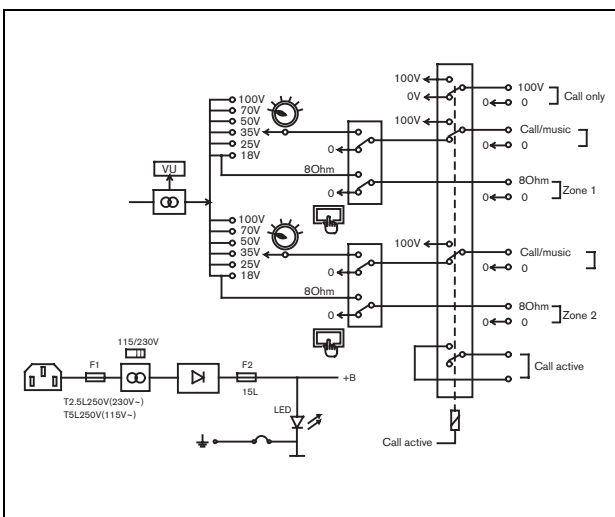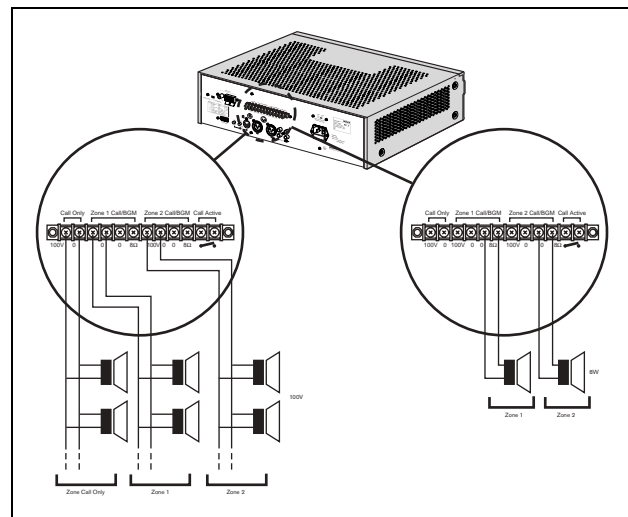Loudspeakers are connected via screw terminals, behind a removable plastic cover for safety. This Plena System Amplifier has a very flexible output configuration, allowing for different groups of loudspeakers.

- Connect 100 V-loudspeakers for zone 1 to the 100 V-/0-terminals of zone 1. The selection button and the output attenuator for zone 1 (both on the front panel) control this output. If a low impedance loudspeaker is used for zone 1, connect it to the 8 Ohm- / 0-terminals of zone 1, but now the output level will not be affected by the attenuator.
- Proceed in the same way for zone 2.
- Connect 100 V-loudspeakers that should receive only priority announcements from microphone 1 to the Call Only 100 V- /0-terminals. For this, the priority mode must be enabled (see §4.2).

The Call Active terminals provide voltage free relay contacts. This contact is closed as long as a priority call is active. This contact may be used for overriding remote volume controls or other purposes. It is switched together with the Call Only loudspeaker zone.

Note
Ensure that the loudspeakers are wired in phase by connecting the 0-terminals of loudspeakers in the same zone together to the amplifier 0-terminal.

Caution
Connect 100 V-loudspeakers in the same zone just in parallel, but take care that the total power of the loudspeakers, i.e. the load, does not exceed the 120 W power rating of this Plena unit

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Caution
It is not recommended to use both low impedance loudspeakers and 100 V-loudspeakers simultaneously. Multiple low impedance loudspeakers should be connected in series or parallel so that the total impedance is more than 8 Ohm.
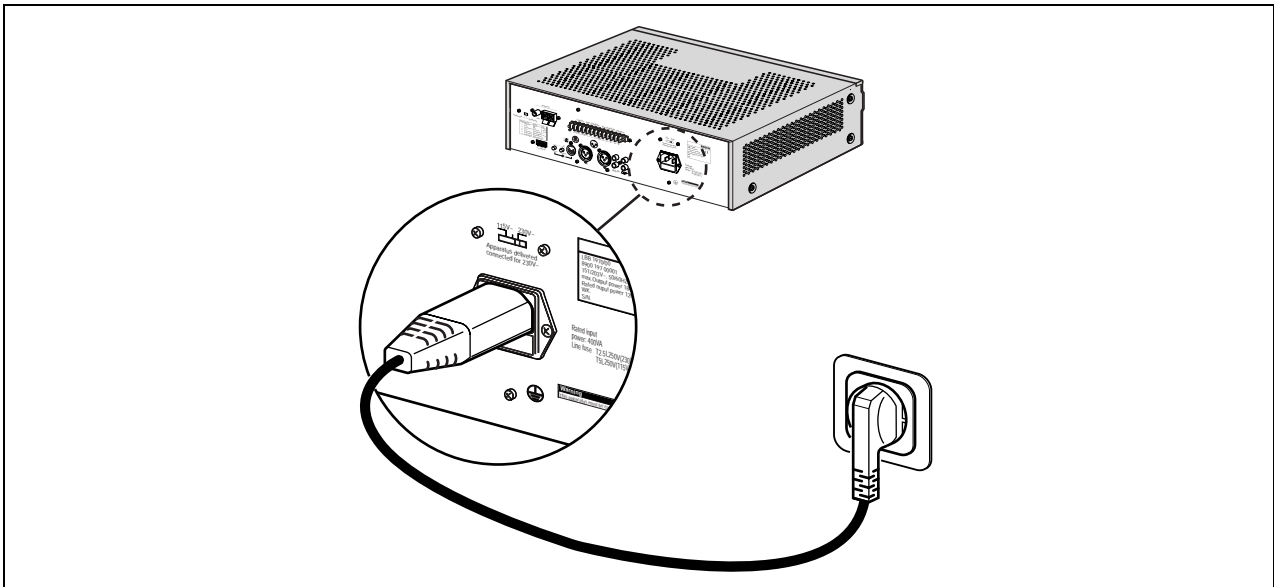
4.5 Mains connection

Figure 4.6

Use the supplied mains cord to connect the system to the mains supply.

> **ℹ Note**
>
> If necessary set the switch 115/230 V to the required voltage using a sharp object, e.g. a small screwdriver.

5   Operation

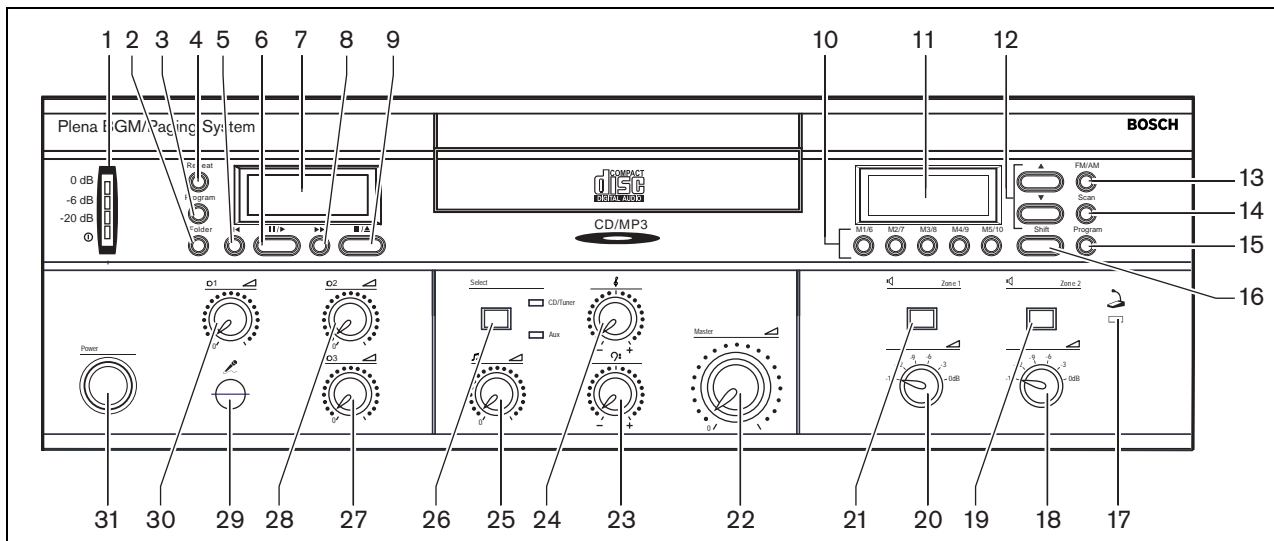## 5.1   Operation of mixer amplifier

Figure 5.1

5.1.1 Source selection
- Use the input volume controls (30, 28, 27 and 25) to balance the sound level of the microphone inputs and the background music.
- Use the music source selection button (26) to select the built-in CD-player/tuner or an auxiliary source. If the auxiliary source is selected, the CD-player and the tuner are switched off. If the CD-player/tuner is selected, the CD-player will be active as long as it is playing. If the CD-player stops, the tuner will take over automatically.

5.1.2 Volume and tone control
- Use the master volume control (22) to control the volume of the music/microphone mix.
- The bass and treble tone controls (23 and 24) affect the microphones as well as the music.

5.1.3 Zone selection
- Use the output attenuators (20 and 18) to balance the sound level in zones 1 and 2, respectively.
- Use the zone selection buttons (21 and 19) to switch a zone on or off. The priority microphone active LED (17) indicates that a priority call is active. Such a priority call overrides the zone selection and attenuation settings. A priority call addresses all zones with 0 dB attenuation.

5.2   Operation of tuner

5.2.1 Station selection
- Use the tuner FM/AM selection key (13) to choose between FM and AM reception.
- Use the tuner frequency up/down keys (12) to step up or down in frequency. Prolonged pressing makes the tuner search for the next station.

5.2.2Programming
- Save the selected radio station as a preset by pressing the tuner program key (15).
- Press the tuner memory keys M1/6 to M5/10 (10) for memory position 1 to 5.

Or

- Press the tuner program key (15), the tuner shift key (16) and the tuner memory keys M1/6 to M5/10 (10) for memory position 6 to 10.
- The tuner display (11) shows 'MEMORY' during this process. Both for AM and FM, 10 presets are available.

Saved presets are selected by pressing the tuner memory keys M1/6 to M5/10 (10) or by pressing the tuner shift key (16) followed by M1/6 to M5/10. For easy selection, pressing the tuner scan key (14) monitors the presets by selecting all 10 presets sequentially for 5 seconds.

5.3 Operation of CD-player

5.3.1 Track selection

> **i** **Note**
> After inserting a new CD, the CD-player detects the type of CD and shows it on the CD display (7): 'CD' for an audio-CD or 'MP3' for a disc containing MP3-files.
> Note that loading of MP3-CD's may take longer, depending on the number of tracks and subdirectories, as an internal table of contents is made. The MP3-files in the root directory and in the subdirectories are all put in separate folders for easy track selection. The folder number is indicated on the display, followed by the track number and the time.

For track selection on audio-CD's proceed as follows:
- Shortly press the CD previous key (5) and/or the CD next key (8) to select the track. Prolonged pressing results in fast reverse or fast forward.
- Use the CD pause/play key (6) to pause or to play (resume playing).
- Use the CD stop/eject key (9) to stop playing (press once) and/or to eject the CD (press twice).

For track selection on MP3-CD's first select the folder that contains the track. Proceed as follows:
- Press the CD MP3 folder selection key (2).
- Press the CD previous key (5) and/or the CD next key (8). The display shows 'FOLDER' during this process. Pressing the CD MP3 folder selection key once more resumes the track selection mode in the selected folder.

By repeatedly pressing the CD repeat key (4) you select the following modes:
  - Playing all tracks (MP3: in all folders) and stop.
  - Repeating the current track. The display shows '1'.
  - Repeating all MP3-tracks within the current folder. The display shows '⊃'.
  - Repeating all tracks (MP3: in all folders). The display shows '⊂⊃'.
  - Random playing of tracks (MP3: in all folders). The display shows 'RANDOM'.

If a MP3-CD is stopped and loaded again, the player will resume playing where it was stopped. In this way it is avoided that only the first part of a very long MP3-CD is played over and over again each day. If, however, an audio-CD is stopped and loaded again, it just starts with track 1.

5.3.2Programming

To program a playlist selection:
- Press the CD program key (3).
- Select a track by pressing the CD previous key (5) and/or the CD next key (8). In the case of a MP3-CD folder selection is possible, as described above.
- Press the CD repeat key (4) to store the first track and step to the next track of the playlist, open for selection.
- Repeat this process until the playlist is finished.
- Finally press the CD pause/play key (6) to start playback of the playlist.

5.4 Creation of MP3 CD-R's

You can make your own MP3 CD-R's (CD-ROM's) on a normal PC with a CD-burner. Numerous programs for this purpose are available as freeware or shareware. Some websites to download from are: www.mp3.com, www.download.com, www.shareware.com and www.zdnet.com.

Search there, or in a general search program as www.google.com, for 'CD-ripper'. You can collect your MP3-files in different subdirectories or folders on your PC and transfer these files to the CD-R. Always use the file name extension *.mp3*. Constant MP3-bit rates (CBR) of 32 - 320 kbps are supported, as well as variable bit rate (VBR) files.

> **i** **Note**
> As the reflectivity of a CD-RW (CD-Rewritable) is far below that of a CD and a CD-R, playback of CD-RW's is not guaranteed. On the CD-R the ISO-9660 file system should be used. Do not use the UDF file system.

6   Technical data

6.1   Electrical

Mains voltage	230/115 Vac, ±10%, 50/60 Hz
Max mains power consumption	400 VA
Max/rated output power	180 W/120 W

6.2   Performance

Frequency response	60 Hz - 18 kHz (+1/-3 dB @ -10 dB ref. rated output)
Distortion	<1% @ rated output, 1 kHz
Bass control	-8/+8 dB @ 100 Hz
Treble control	-8/+8 dB @ 10 kHz

6.3   Inputs

Input 1 (5-pin DIN, balanced with phantom power, 6.3 mm phone jack)

Sensitivity	1 mV
Impedance	>1 kOhm
S/N (flat at max volume)	63 dB
S/N (flat at min volume/muted)	75 dB
Headroom	25 dB
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
Phantom power supply (on 5-pin DIN only)	12 V
VOX (on 6.3 mm phone jack)	trigger level 0.4 mV
	attack time 200 ms
	release time 2 s
	ducking level adjustable

Input 2 and 3 (3-pin XLR, balanced with phantom power)

Sensitivity	1 mV
Impedance	>1 kOhm
S/N (flat at max volume)	63 dB
S/N (flat at min volume/muted)	75 dB
Headroom	25 dB
Phantom power supply	12 V

Auxiliary input (Cinch, stereo converted to mono)

Sensitivity	200 mV
Impedance	22 kOhm
S/N (flat at max volume)	70 dB
S/N (flat at min volume/muted)	75 dB
Headroom	25 dB

6.4   Tuner

Tuning range

FM	87.5 - 108 MHz (EUROPE, 50 kHz)
	87.5 - 108 MHz (ASIA/AMERICA, 100 kHz)
AM	531 - 1602 kHz (EUROPE, 9 kHz)
	530 - 1610 kHz (ASIA/AMERICA, 10 kHz)

Sensitivity

FM	2 µV (26 dB S/N)
AM	30 µV (20 dB S/N)

Performance

Frequency response	30 Hz - 15 kHz (+1/-3 dB, FM)
Distortion	<1%
S/N	> 63 dB (1 mV, FM)

6.5 CD-player

Audio CD

Frequency response	20 Hz - 20 kHz (+1/-3 dB)
Distortion	<0.1%
S/N	>80 dB

MP3 CD/CD-R

Supported bit rates	CBR 32 kbps - 320 kbps and VBR, mono and stereo

General

Data buffer (shock protection)	8 MByte
Lifetime	>10.000 CD play cycles
Memory for track selection	999 tracks (MP3), 99 tracks (audio CD)

6.6 Outputs

Tape output (Cinch, 2x mono)

Nominal level	350 mV
Impedance	1 kOhm

Loudspeaker outputs

100 V outputs	120 W rated (all zones together)
Zone output attenuation taps	100/70/50/35/25/18 V for 0/-3/-6/-9/-12/-15 dB
8 Ohm outputs	18 V (40 W rated per zone)

Call active relay

Contacts	voltage free, max 100 V, 2 A

6.7 Environmental conditions

Operating temperature range	+5 to +45 °C
Storage temperature range	-25 to +55 °C
Relative humidity	<95%

6.8 General

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2
Safety	acc. to EN 60065
Acoustic noise level of fan	<35 dBSPL @ 1 m, temperature controlled
Dimensions	144 x 430 x 320 mm (19" wide, 3U high)
Weight	approx. 11.6 kg
Rack building	not recommended

For more information visit
www.boschsecuritysystems.com

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