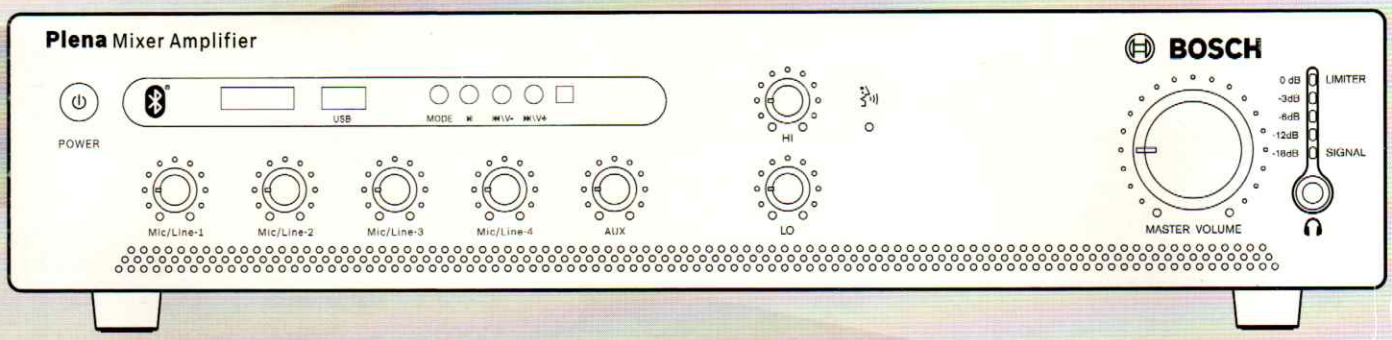
BOSCH

# Mixer amplifier, USB/BT

PLE-1ME060-3AP | PLE-1ME120-3AP | PLE-1ME240-3AP




**en** Installation Manual

# Table of contents

# 1 System overview

The PLENA Mixer amplifier is part of the PLENA product range. The PLENA product range provides public address solutions for places where people gather to work, worship, trade, or relax. It is a family of system elements that are combined for a particular application.

The PLENA product range includes:
- mixers
- preamplifiers
- power amplifiers
- a music source unit
- digital message manager
- a feedback suppressor
- call stations
- an All-in-One system
- a voice alarm system
- a timer
- a charger
- a loop amplifier.

The various elements are designed to complement each other thanks to matched acoustical, electrical and mechanical specifications.

## 1.1 Contents of the box

The packaging box contains the following contents:
- Mixer amplifier (PLE-1MExxx-3AP)
- Remote control unit with battery
- Colored pins for indicating favorite settings
- Power cord
- Installation and operation manual

**Notice!**
The Mixer amplifier has a 100 V loudspeaker output.

## 1.2 The Mixer amplifier

The Mixer amplifier with in-built USB/BT audio module is a high performance, professional public address unit for mixing up to four separate microphone/line signals and one music signal. It is comprised of an integrated mixer amplifier and audio player that can stream audio from Bluetooth & USB pen drive containing audio files. It is used for making announcements, paging people and playing background music.
The volume of each microphone/line signal can be individually adjusted to obtain the required mix. The mixed output is controlled via the master volume control and separate high/low tone controls. The unit is easy to use and provides a crisp call or clear music. The amplifier also has enhanced features such as priority and setting indicators.

The unit also has insert IN/OUT connector for loop-through connections. Loop-through input and output connections enable external sound processing equipment (for example, an equalizer or PLENA feedback suppressor) to be connected between the preamplifier and the power amplifier stages. A feedback suppressor can ensure feedback-free, clear speech for all microphones.
All Microphone/line inputs can be switched between microphone level and line level sensitivity. The inputs are balanced but can also be used unbalanced. Phantom power can be selected via a DIP switch to provide power to condenser microphones. Input channel 1 can take priority over all other microphone and music inputs.
Input 1 can be activated by contact closure on a PTT (push to talk). A chime can be configured to precede an announcement. To activate this function use a PLE call station from Bosch.
Colored pins can be inserted at various positions around the volume and tone dial controls to indicate favorite settings for a particular application.
The LED VU meter monitors the master output and displays based on the output level, this output signal is also present on the headphone connector below the output level meter.
For total reliability and ease of use, a limiter is integrated into the output stage to restrict output if the user applies too much signal. Output is restricted within +1dB from the rated output voltage. The limiter is adjusted to get activated when the input level exceeds the level required for rated output voltage.

**Caution!**
Care should be taken by the user to limit the input level to be within +20dB of the input level specification.

## 1.3 Controls, connectors and indicators

### 1.3.1 Front panel

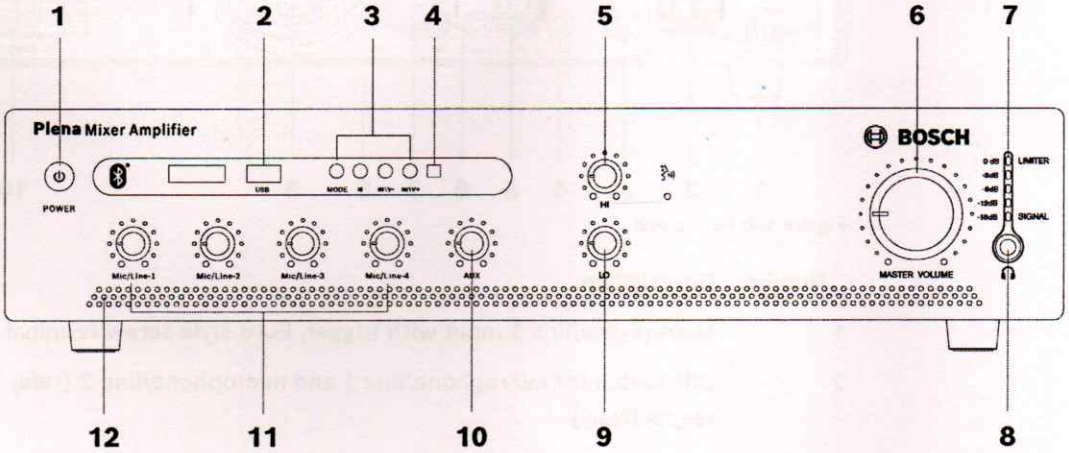



**Figure 1.1:** Front panel

| Number | Description |
|---|---|
| 1 | Power ON/OFF button with indication |
| 2 | USB connector |
| 3 | USB/BT keyboard function selection buttons |
| 4 | IR remote sensor |

| | |
|---|---|
| 5 | High tone control |
| 6 | Master volume control |
| 7 | Output level meter (-18 dB to 0 dB) |
| 8 | Headphone socket |
| 9 | Low tone control |
| 10 | AUX source volume control |
| 11 | Input level control<br>• microphone/line 1<br>• microphone/line 2<br>• microphone/line 3<br>• microphone/line 4 |
| 12 | Air inlet holes |

**Notice!**
Do not obstruct the airflow into the unit.

## 1.3.2 Rear panel

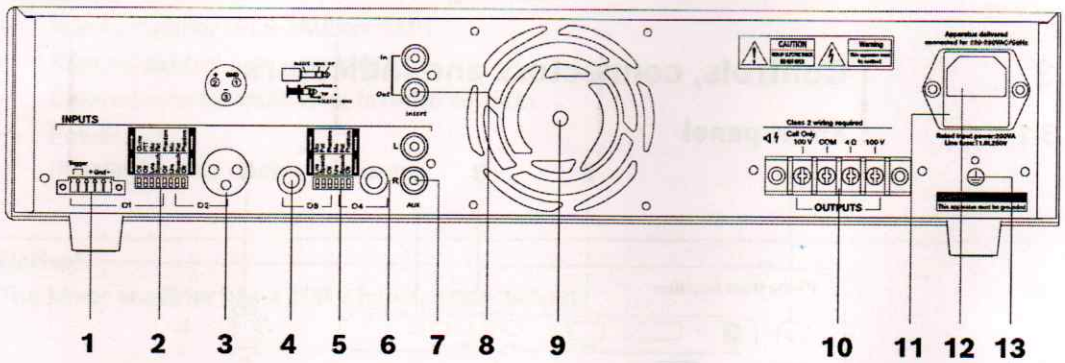



**Figure 1.2:** Rear panel

| Number | Description |
|---|---|
| 1 | Microphone/line 1 input with trigger, Euro style screw terminal connector |
| 2 | DIP switch for microphone/line 1 and microphone/line 2 (refer to numbers 1 and 3 respectively) |
| 3 | Microphone/line 2 input, 3 pin XLR female connector. DIP switch settings for speech filter, mic/line and phantom power (refer to number 2) |
| 4 | Microphone/line 3 input, 6.3 mm - 1/4" jack connector. DIP switch settings for mic/line and phantom power (refer to number 5) |
| 5 | DIP switch for microphone/line 3 and microphone/line 4 (refer to numbers 4 and 6 respectively) |

| | |
|---|---|
| 6 | Microphone/line 4 input, 6.3 mm - 1/4" jack connector. DIP switch settings for mic/line and phantom power (refer to number 5) |
| 7 | AUX input, 2x RCA/cinch connectors, stereo, summed to mono |
| 8 | Pre-out, amp in insert, 2 x RCA/cinch connector can be used for EQ or feedback suppressor |
| 9 | Cooling fan (PLE-1ME120-3AP and PLE-1ME240-3AP) |
| 10 | Outputs:<br>– Call only 100 V priority output<br>– 100 V speaker output<br>– 4 Ohm speaker output |
| 11 | Mains fuse |
| 12 | Mains connector (3-pole) |
| 13 | Earth connection screw |

**Notice!**
The unit must be earthed.
Always allow adequate space at the rear of the unit for ventilation.

# 2 Installation

## 2.1 Unpack unit

1. Remove the unit from the box, and discard the packaging material according to local regulations.
2. Carefully peel off the protective plastic film from the LCD display. Do not use sharp or pointed objects.

## 2.2 Check settings/connections

1. Connect any additional equipment (refer to *Connecting inputs, page 9* and *Connecting outputs, page 10*).
2. Check the settings (refer to *Unit settings, page 13*).

## 2.3 Connect unit to mains

1. Make sure the power switch is in the OFF condition.
2. Connect the power cord to the mains connector and plug it into the mains outlet.

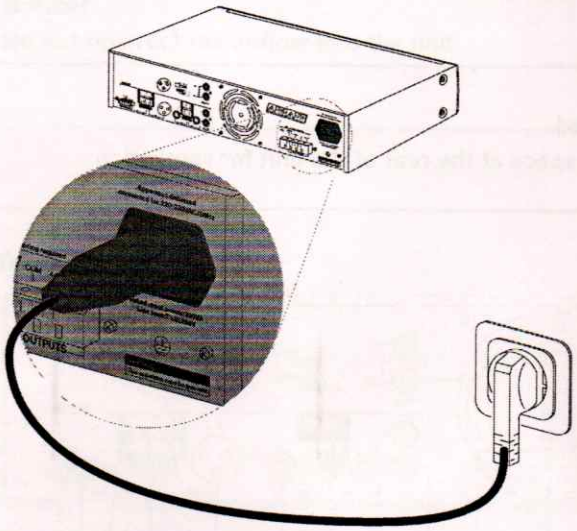


**Figure 2.1:** Power connection

# 3 Connection

## 3.1 Connecting inputs

### 3.1.1 Priority microphone (input 1)

The PLENA call station PLE-1CS or PLE-1SCS (or a generic call station) that can be used with push to talk (PTT) should be connected to microphone/line input 1. The PTT mode can be activated by setting the DIP switch at the rear of the unit. Thus the unit with call station can function as a standard announcement system with microphone. It has chime and priority. The microphone/line input 1 has a Euro style screw terminal connector.

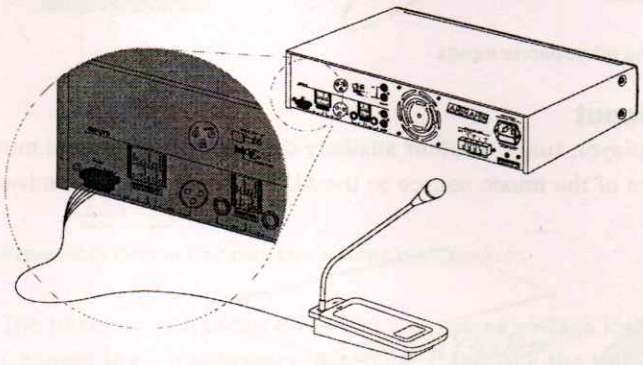


**Figure 3.1:** Euro connector with trigger

### 3.1.2 Secondary microphone (input 2)

Connect a secondary microphone to microphone/line input 2.
Set the DIP switch settings next to the connector as required. Refer to *Unit settings, page 13*.

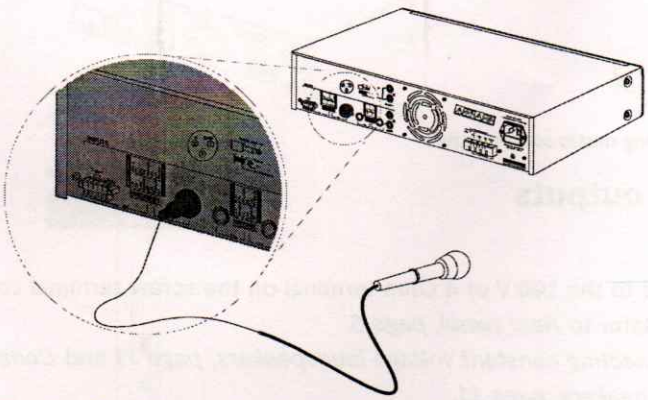


**Figure 3.2:** Connecting microphone to XLR connector

### 3.1.3 Additional microphones (inputs 3 and 4)

Connect additional microphones to microphone/line inputs 3 and 4 as required. Refer to Figure 5.3. These microphones will mix with the background music.
Set the DIP switch settings between connector for microphone/lines-3 and 4, as required. Refer to *Unit settings, page 13*.

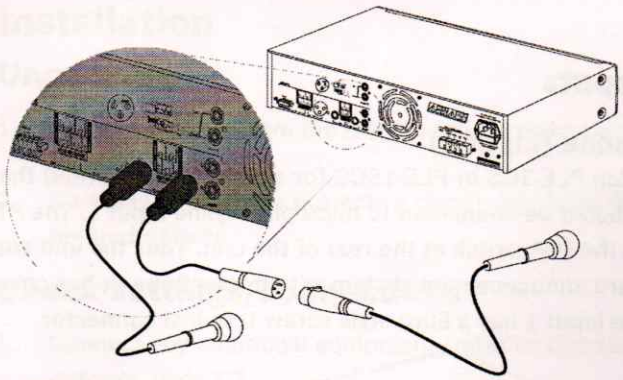


**Figure 3.3:** Connecting microphone inputs

### 3.1.4 Music source input

When using a CD player, tuner or other auxiliary device for background music, connect the line-out connectors of the music source to the AUX connectors of the mixer amplifier. Refer to Figure 5.4.

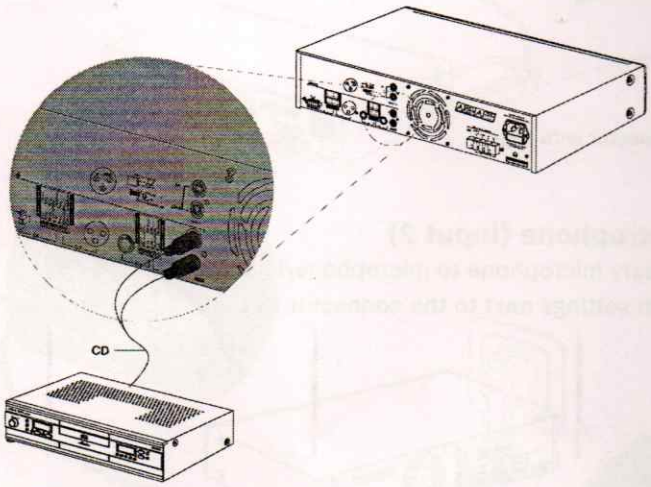



**Figure 3.4:** Connecting music source inputs

## 3.2 Connecting outputs

### 3.2.1 Main output

Connect speakers to the 100 V or 4 Ohm terminal on the screw terminal connector (10) at the rear of the unit. Refer to *Rear panel, page 6*.
Also refer to *Connecting constant voltage loudspeakers, page 11* and *Connecting low impedance loudspeakers, page 11*.

### 3.2.2 Call only

Connect speakers to the call only 100 V terminal on the screw terminal connector (10) at the rear of the unit. Refer to *Rear panel, page 6*.
Also refer to *Connecting constant voltage loudspeakers, page 11*.

### 3.2.3 Connecting constant voltage loudspeakers

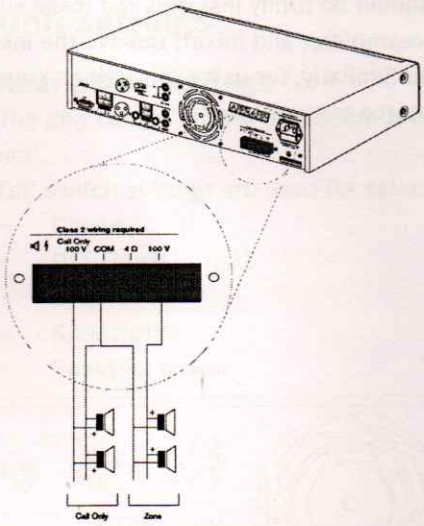



**Figure 3.5:** Connecting constant voltage loudspeakers

The mixer amplifier can drive 100 V constant voltage loudspeakers.
Connect the loudspeakers in parallel and check the loudspeaker polarity for in-phase connection. The summed loudspeaker power should not exceed the rated amplifier output power.

### 3.2.4 Connecting low impedance loudspeakers

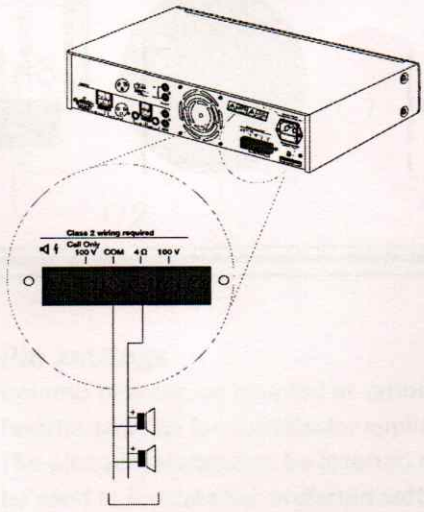



**Figure 3.6:** Connecting low impedance loudspeakers

Connect low impedance loudspeakers to the 4 Ohm and COM terminals. This output can deliver the rated output power into an 4 Ohm load. Connect multiple loudspeakers in a series/parallel arrangement to make the combined impedance of 4 Ohm or higher. Check the loudspeaker polarity for in-phase connection.

### 3.2.5 Insert IN / Insert OUT

For normal operation the insert link should be firmly inserted and make sure there is no loose contact. For connecting the unit as preamplifier and mixer, remove the insert link and connect the external device from the OUT jack. Similarly, for using this unit as power amplifier remove the insert and connect the external source to the IN jack.

# 4 Configuration

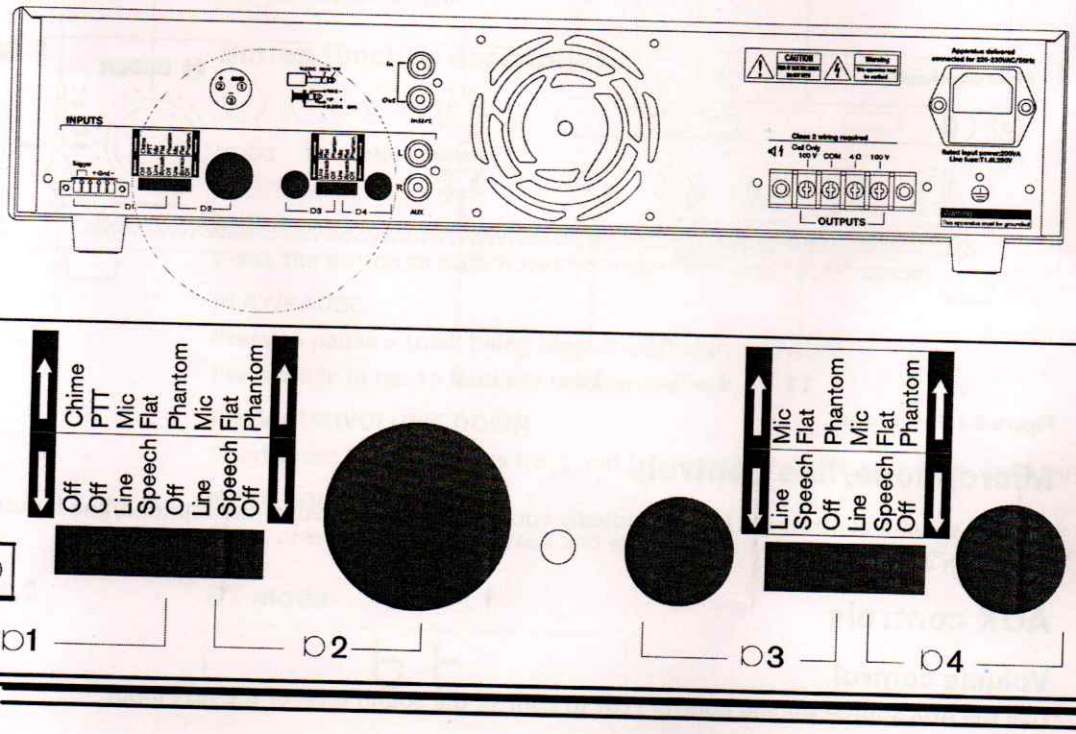
## 4.1 Unit settings

### 4.1.1 Rear panel settings

The unit can be quickly set-up for operation by setting the following controls at the rear of the unit.

DIP switch settings are used for selection of the following:

- Chime
- PTT (push to talk)
- Mic/line
- Speech/flat
- Phantom power




### 4.1.2 Pin settings

Colored pins can be inserted at various positions around the dial controls to indicate the favorite settings for a particular application (refer to Figure 7.1).

The pins are intended to be inserted once during installation of the unit. The silver pins should be used to indicate the preferred settings of the unit. The red pins can optionally be used to indicate the maximum setting of the knob. If these settings have to be changed, then remove the pins carefully.

Note: Remove the clear plastic cover in front of the LCD display for better visibility.

# 5 Operation

## 5.1 Switch ON and OFF

### 5.1.1 Switch ON

Set the power button (1) on the front of the unit to ON (pushed in).
With Power ON, the Green LED around the switch will be lit (refer to Figure 7.1).

### 5.1.2 Switch OFF

Set the power button (1) on the front of the unit to OFF (popped out).
With Power OFF, the Green LED around the switch will be OFF (refer to Figure 7.1).

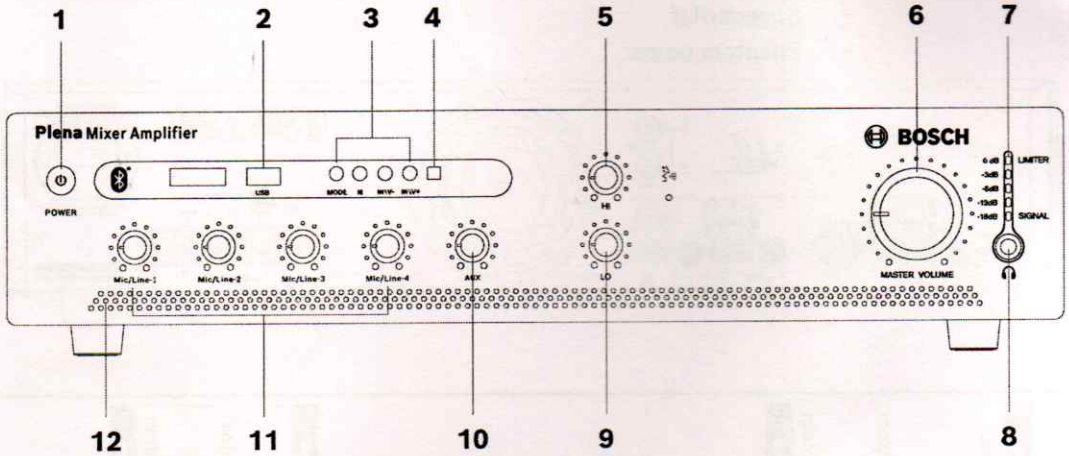



**Figure 5.1:** Front panel

## 5.2 Microphone/line controls

Use the volume controls (11) to individually control the sound level of microphone/line inputs 1 through 4.

## 5.3 AUX controls

### 5.3.1 Volume control

Use the AUX source volume control (10) to control the sound level of the AUX input.

### 5.3.2 Tone control

The tone controls can be used as a traditional tone control with high and low control.
The tone control for the low frequencies boosts deep bass first without making the sound boomy and cuts rumble without losing warmth in the low frequencies.
Use the Hi (high) and Lo (low) tone controls (refer to Figure 7.1, numbers 5 and 9) to change the tone.

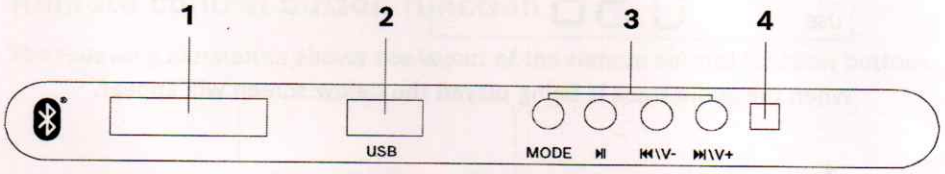
## 5.4 Output controls

### 5.4.1 Master volume control

Use the master volume control (6) to collectively control the sound level of all outputs.

# 6 USB/BT module operation

## 6.1 Front panel




1. LCD display
2. USB connector
3. USB/BT keyboard function selection buttons
4. IR remote sensor

### 6.1.1 Button function description

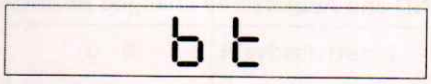

**MODE**
Press the button to switchover between "BT" and "USB" modes.

**PLAY/PAUSE**
Press to pause a track being played. LCD shows "PAUS".
Press while in pause mode to resume payback.

**PREVIOUS\VOLUME DOWN**
Short press to go previous track and long press to decrease volume (minimum level is 0).

**NEXT\VOLUME UP**
Short press to go to next track and long press to increase volume (maximum level is 32).

### 6.1.2 BT mode



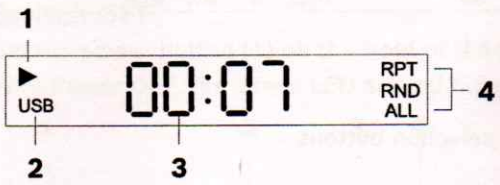

When the unit is powered ON, the amplifier is in BT mode. The LCD shows "bt".
An external device (e.g. mobile phone/PC) can be paired with the amplifier in this mode.
When searched from an external device, the amplifier name appears as "BOSCH PLENA AMPLIFIER".

**Notice!**
Once you pair the amplifier with an external device (e.g. mobile phone), the amplifier will no longer be visible to other Bluetooth devices.

### 6.1.3 USB mode

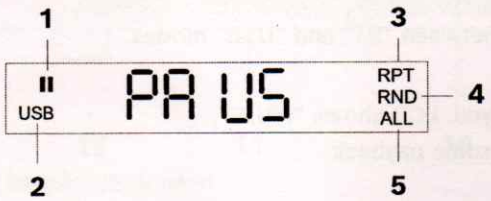
Plug the pen drive and press the Mode button for USB mode selection. "USb" (1) text appears on the display.
USB (2) text flashing indicates scanning/reading the contents of the USB pen drive.


When the audio track is being played the below screen will appear.




1. Play status
2. Mode indication
3. Duration of track
4. Play modes

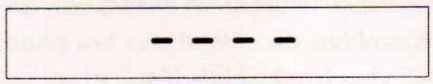
When the play/pause button is pressed the below screen will appear.




1. Pause status
2. Mode indication
3. RPT - repeat one
4. RND - random
5. ALL - repeat all

Note: The three modes above (RPT, RND and ALL) can be changed from the remote control by pressing the "↩" button.

When the amplifier is powered ON or reading from the pen drive, the LCD display indicates as shown below.




## 6.2 USB/BT module specifications

### 6.2.1 USB specifications

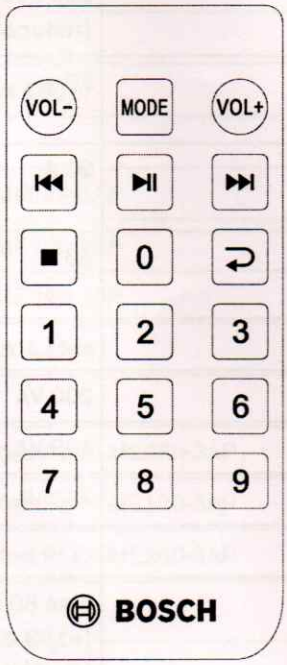
One USB 2.0 4-pin connector to act as a host controller that can operate with the memory device up to 32GB. Output current redundancy limiter at 500mA max @5V, it can only support a memory device, it cannot support an SDIO device.

- Playable layers: The directory layers can support up to 7 levels.
- Maximum supported songs: 8000 songs.
- Maximum supported folders (255).
- Supported audio formats: MP3 and WAV files with bit rates from 32kbps.
- File systems: FAT32.

Note: For better performance of the amplifier, we recommend to store only audio files in the USB pen drive.

## 6.3 Remote control button function

The following illustration shows the layout of the remote control function buttons.




All remote control button functions are the same as described for the amplifier unit, except for the following buttons that are only available on the remote control.

| Button | Function | Instruction |
|---|---|---|
| 0 - 9 | Playback tracks | Use the 0-9 numbered buttons to select the required track from USB pen drive. |
| ■ | Stop | Press button to stop the current track being played. |
| ↩ | Repeat/Random/All | Press button to select Repeat/Random/All mode.<br>– Press to repeat playback of the current track. LCD shows “RPT”.<br>– Press again to playback a random track. LCD shows “RND.”<br>– Press again to playback all tracks in sequence. LCD shows “ALL”.<br>If the amplifier is powered OFF and turned ON again, the module will remain in the last selected mode. |

# 7 Technical data

**Electrical**

| **Mains power supply** | |
|---|---|
| Voltage PLE-1MExxx-3AP | 220-230 VAC, 50 Hz<br>(reduced power at lower mains) |
| Inrush current<br>PLE-1ME060-3AP | 10 A |
| Inrush current<br>PLE-1ME120-3AP | 36 A |
| Inrush current<br>PLE-1ME240-3AP | 40 A |
| **Power consumption** | |
| PLE-1ME060-3AP | 200 VA |
| PLE-1ME120-3AP | 400 VA |
| PLE-1ME240-3AP | 760 VA |
| **Performance** | |
| Frequency response | Line 80 Hz to 18 kHz<br>(+1/-3 dB @ -10 dB ref. rated output)<br>Mic 80 Hz to 18 kH<br>(+1/-3 dB @ -10 dB ref. rated output) |
| Distortion | <1% @ rated output power, 1 kHz |
| Bass control | ≤+8 dB & ≥-8 dB |
| Treble control | ≤+8 dB & ≥-8 dB |
| **Mic./Line input 4 x** | |
| Input 1 (Push-to-talk contact with priority) | 5-pin Euro style, balanced, phantom |
| Input 2 | 3-pin XLR female, balanced, phantom |
| Input 3 and 4 | TRS Jack (6.35 mm), balanced |
| Sensitivity | 1mV (mic); 200 mV (line) |
| Impedance | >1 kOhm (mic); >5 kOhm (line) |
| S/N (flat at max. volume) | ≥60 dB (mic); ≥65 dB (line) |
| Headroom | >25 dB |
| **AUX input** | |
| Connector | Cinch, stereo converted to mono |
| Sensitivity | 200 mV to 300 mV |
| Impedance | 22 kohm |
| S/N (flat at max. volume) | ≥70 dB |

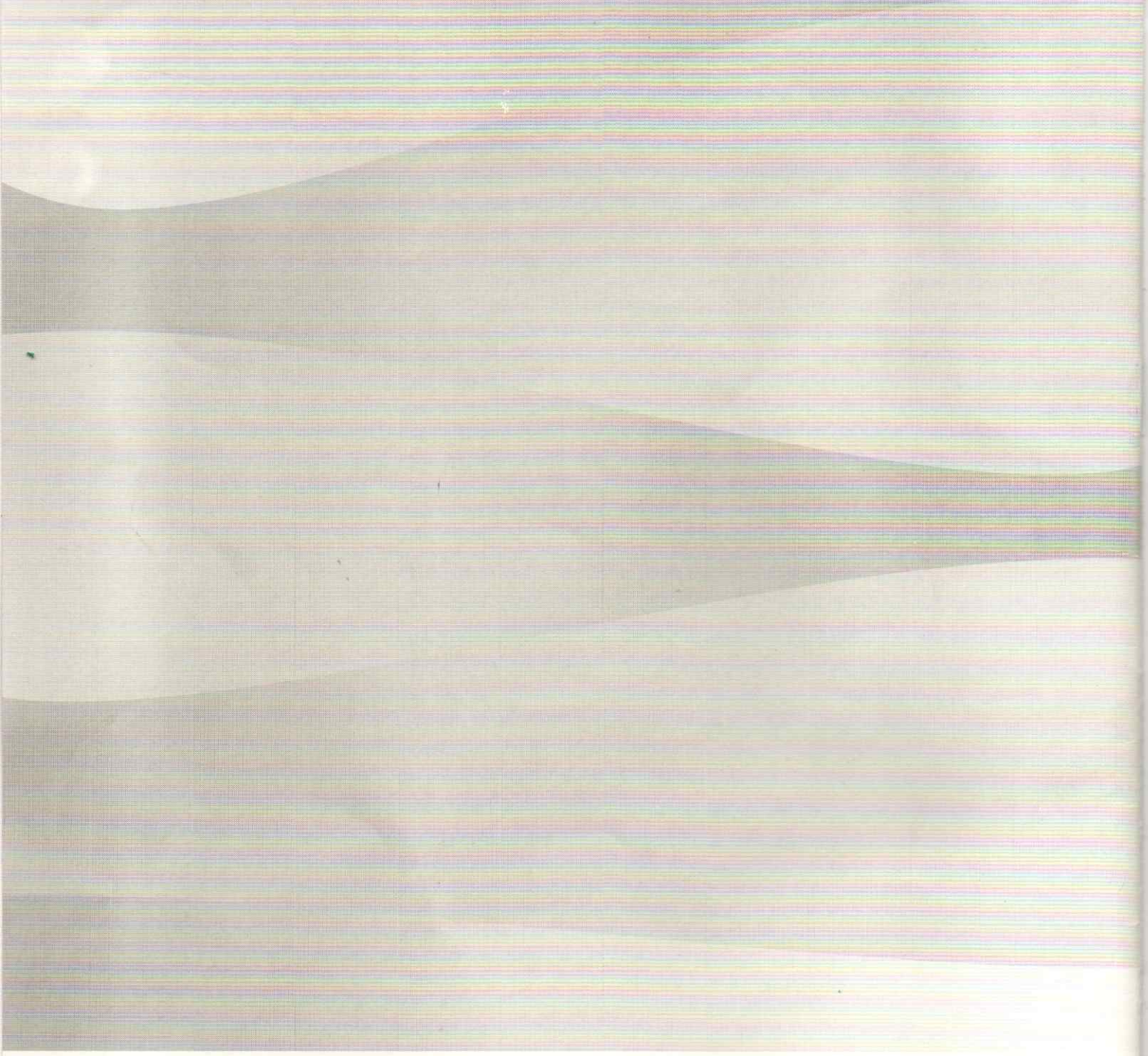
| | |
|---|---|
| Headroom | >25 dB |
| **Loop through insert 1 x** | |
| Connector | RCA Cinch |
| Sensitivity | 1 V |
| Impedance | >10 kohm |
| **Loudspeaker output 100 V** | |
| Connector | Screw terminal, floating |
| Max. / rated PLE-1ME060-3AP | 90 W / 60 W |
| Max. / rated PLE-1ME120-3AP | 180 W / 120 W |
| Max. / rated PLE-1ME240-3AP | 360 W / 240 W |
| **Loudspeaker output 4 ohm** | |
| Connector | Screw terminal, floating |
| Output voltage / rated PLE-1ME060-3AP | 15.5 V / 60 W |
| Output voltage / rated PLE-1ME120-3AP | 22 V / 120 W |
| Output voltage / rated PLE-1ME240-3AP | 31 V / 240 W |

**Mechanical**

| | |
|---|---|
| Dimensions (H x W x D) | 100 mm x 430 mm x 290 mm<br>(19" wide, 2U high) |
| Mounting | Stand-alone, 19" rack |
| Color | Charcoal |
| Weight | |
| PLE-1ME060-3AP | Approx. 6.5 kg |
| PLE-1ME120-3AP | Approx. 8.9 kg |
| PLE-1ME240-3AP | Approx. 10.5 kg |

**Environmental**

| | |
|---|---|
| Operating temperature | -5 °C to +45 °C |
| Storage and transport temperature | -40 °C to +70 °C |
| Relative humidity | <95% |



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