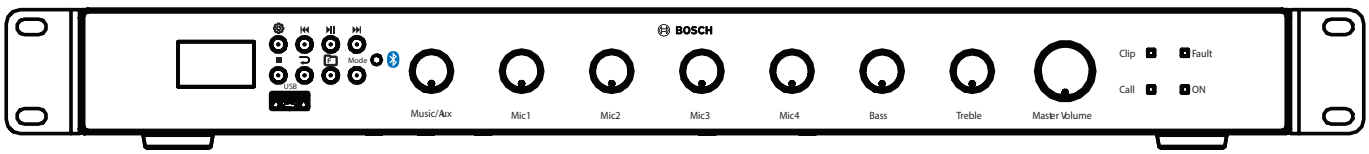
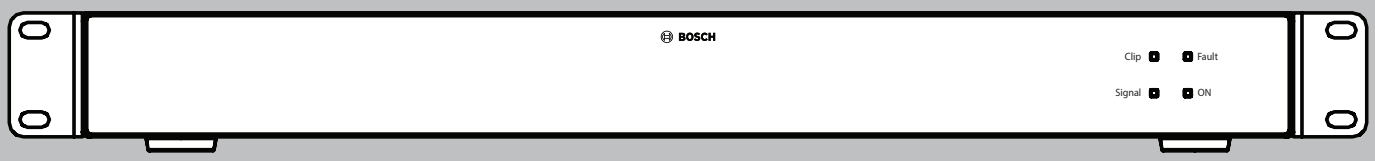
Class-D amplifier

PLE-1ME060-4IN | PLE-1ME120-4IN | PLE-1ME240-4IN |
PLE-1P120-IN | PLE-1P240-IN





en User manual

Table of contents

1 Safety

Before installing or operating this product, always read the Safety Instructions given in this manual.

Alerts on the appliance	
	This symbol found on the device indicates hazards arising from dangerous voltages. **Warning!** Not observing the alert can lead to severe injuries or death.
	This device must be grounded.

- Read these instructions - All the safety instructions for use should be read before the system is operated.
- Retain these instructions - The safety instructions and operating instructions should be retained for future reference.
- Heed warnings - All warnings on the apparatus and in operating instructions should be adhered to.
- Follow instructions - All operating instructions and instructions for use should be followed.
- Cleaning - Unplug the apparatus from the mains outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use only a dry cloth for cleaning.
- Attachments - Do not use attachments which are not recommended by the product manufacturer as they may cause hazards.
- 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.
- 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, 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.
- 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. Maintain a minimum distance of 2 inch (50 mm) around the front, the rear and the sides of the unit for sufficient ventilation.
- Heat sources - Do not install the unit near any heat sources such as radiators, stoves, or other apparatus that produce heat (including amplifiers).
- Open flames - No open flames, such as lighted candles, should be placed on the unit.
- Power sources - Units should be operated only from the type of power source indicated on the product. 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".
- Grounding or polarization - This unit may be equipped with a polarized 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 polarized 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 plug.

- 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.
- Overloading - Do not overload outlets and extension cords as this can result in a risk of fire or electrical shock.
- 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.
- Servicing - Do not attempt to service this unit yourself as opening or removing covers may expose to dangerous voltage or other hazards. Refer all kind of servicing to a qualified service personnel.
- Damage requiring service - Unplug the unit from the power 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 as per user manual.
  - 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.
- 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. Unauthorized substitutions may result in fire, electric shock or other hazards.
- 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.
- 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.
- Disconnection - To completely disconnect this unit from the AC mains, disconnect the power supply cord plug from the AC receptacle. The mains plug of the power supply cord shall remain readily operable to be able to disconnect power from the unit.
- Disposal - Place the device in a separate collection facility for electronic waste. Do not dispose of the device with household waste.

2 Short information

2.1 Manual purpose

The purpose of this manual is to provide information required for installing, configuring and operating PLENA Mixer and Power amplifiers.

2.2 Digital document

This manual is also available digitally for download on the product page at https://www.keenfinity-group.com/

2.3 Intended audience

This manual is intended for installers and users of PLENA Mixer and Power amplifiers.

2.4 Alerts and notice signs

Two types of alerts can appears used in this manual. The alert type is closely related to the effect that may be caused if it is not observed. The alerts from least severe to most severe are:

Notice!
Alert containing additional information. Usually, not observing a 'notice' does not result in damage to the equipment or personal injuries.

Caution!
This symbol indicates that the user must read all safety statements found in the operating instructions.

2.5 Conversion tables

In this manual, SI units are used to express lengths, masses, temperatures etc. These can be converted to non-metric units using the information provided below.

1 in =	25.4 mm	1 mm =	0.03937 in
1 in =	2.54 cm	1 cm =	0.3937 in
1 ft =	0.3048 m	1 m =	3.281 ft
1 mi =	1.609 km	1 km =	0.622 mi

Table 2.1: Conversion of units of length

1 lb =	0.4536 kg	1 kg =	2.2046 lb

Table 2.2: Conversion of units of mass

1 psi =	68.95 hPa	1 hPa =	0.0145 psi

Table 2.3: Conversion of units of pressure

Notice!
1 hPa = 1 mbar

$$°F = \frac{9}{5} . °C + 32$$

$$°C = \frac{5}{9} . (°F - 32)$$

3 System overview

The PLENA Mixer and Power amplifiers are 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.

3.1 Parts included

The packaging box of the **Class-D mixer amplifiers** contains the following contents:

- Class-D mixer amplifier:
  - PLE-1ME060-4IN Class-D Mixer Amplifier, 60W, USB/BT
  - PLE-1ME120-4IN Class-D Mixer Amplifier, 120W, USB/BT
  - PLE-1ME240-4IN Class-D Mixer Amplifier, 240W, USB/BT
- Power cord
- Pair of mounting brackets with screws
- Remote control unit with battery
- MIC-1 input connector (1x5 phoenix connector)
- Output connector (1x5 phoenix connector)
- FM antenna
- User manual

The packaging box of the **Class-D power amplifiers** contains the following contents:

- Class-D power amplifier:
  - PLE-1P120-IN Class-D Power Amplifier, 120W
  - PLE-1P240-IN Class-D Power Amplifier, 240W
- Power cord
- Pair of mounting brackets with screws
- Slave input connector, 100 V (1x2 phoenix connector)
- Output connector (1x5 phoenix connector)
- User manual

Notice!
The Class-D amplifier has a 100 V loudspeaker output.

3.2 Class-D amplifier

The Class-D mixer amplifier with audio module is a high performance, professional public address unit for mixing up to four separate microphone/line signals and one music signal. The amplifier is comprised of an integrated mixer amplifier and audio player that can stream audio from Bluetooth and USB pen drives containing audio files. It is used for making announcements, paging people, and playing background music. It can also be used with FM radio stations.
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.
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.

The Class-D power amplifier, in a 19 inches case with 1U of height, is for rack-mounting or tabletop use. The Plena power amplifier series, with its varied amplification range, fulfills a wide variety of public address requirements.

For total reliability and ease of use, a limiter is integrated to restrict the 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.

3.2.1 Front panel

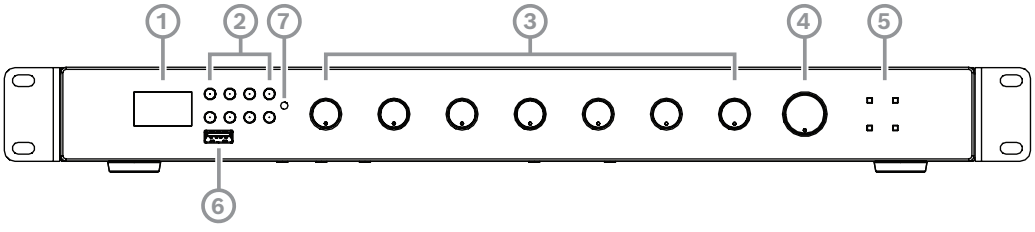


Figure 3.1: Front panel of the mixer amplifier

Number	Description
1	LCD display
2	Selection button for the keyboard function
3	Input level control: – AUX – Microphone/line 1

- Microphone/line 2
- Microphone/line 3
- Microphone/line 4
- Bass
- Treble

4 Master volume control

5 LED indicators

6 USB connector

7 IR remote sensor

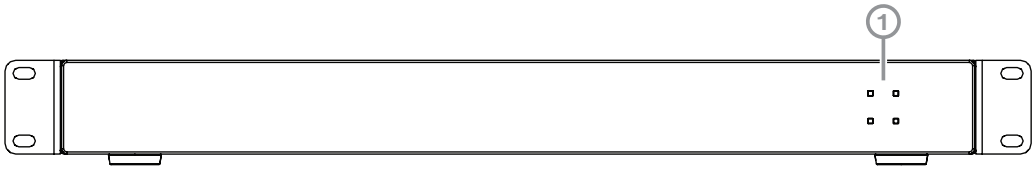


Figure 3.2: Front panel of the power amplifier

Number	Description
1	LED indicators

Notice!
Do not obstruct the airflow into the unit.

3.2.2 Rear panel

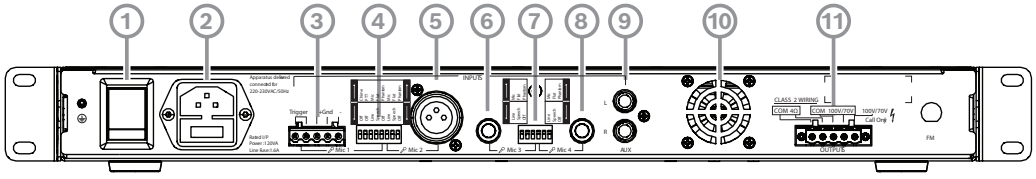


Figure 3.3: Rear panel of the mixer amplifier

Number	Description
1	Power ON/OFF button
2	Mains connector (3-pole) and mains fuse
3	Microphone/line 1 input with trigger, Euro style screw terminal connector

4 DIP switch for microphone/line 1 and microphone/line 2. Switch settings for speech filter, MIC/line and phantom power

5 Microphone/line 2 input, 3 pin XLR female connector

6 Microphone/line 3 input, 6.3 mm, 1/4" jack connector

7 DIP switch for microphone/line 3 and microphone/line 4. Switch settings for speech filter, MIC/line and phantom power

8 Microphone/line 4 input, 6.3 mm, 1/4" jack connector

9 AUX input, 2x RCA/cinch connectors, stereo, summed to mono

10 Cooling vent (PLE-1ME60, PLE-1ME120)
Cooling fan (PLE-1ME240)

11 Outputs:
- Call only 100 V priority output
- 100 V speaker output
- 4 Ω speaker output

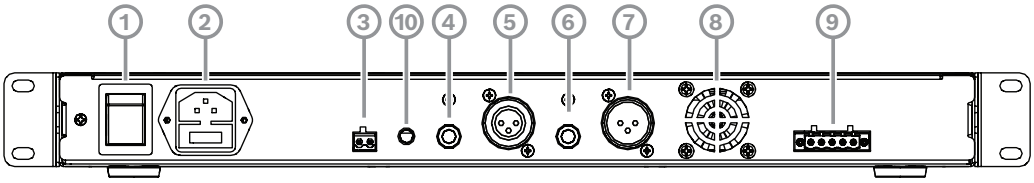


Figure 3.4: Rear panel of the power amplifier

Number	Description
1	Power ON/OFF button
2	Mains connector (3-pole) and mains fuse
3	100 V slave-In, Euro style screw terminal connector
4	Line-In 1 input, 6.3 mm, 1/4" jack connector
5	Line-In 2 input, 3 pin XLR female connector
6	Line-Out 1 input, 6.3 mm, 1/4" jack connector
7	Line-Out 2 input, 3 pin XLR female connector
8	Cooling vent (PLE-1P120-4IN) Cooling fan (PLE-1P240-4IN)
9	Outputs: – 70 V speaker output – 100 V speaker output – 4 Ω speaker output
10	Volume control

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

3.3 Other range of PA products

Other range of Bosch PA products
The following tables list other Bosch PA products:

PLENA All-in-One	CTN
a. PLENA 90W all-in-one amplifier	PLN-1AIO090-IN
b. PLENA 180W all-in-one amplifier	PLN-2AIO180-IN
c. PLENA 360W all-in-one amplifier	PLN-2AIO360-IN

Power amplifier	CTN
a. Plena Booster Amplifier 120 W	LBD1930/00
b. Plena Booster Amplifier 240 W	LBD1935/00
c. Plena Booster Amplifier 480 W	LBD1938/00

Column speakers	CTN
a. Metal column speaker 30W, black	LA2-UM30-D-IN
b. Metal column speaker 40W, black	LA2-UM40-D-IN
c. Metal column speaker 60W, black	LA2-UM60-D-IN

Wooden cabinet speakers	CTN
a. Cabinet speaker, 6W, dark	LBD3902-D
b. Corner cabinet speaker, 6W , dark	LBD3904-D
c. Bi-directional cabinet speaker, 12W, dark	LBD3905-D

Ceiling speakers	CTN
a. Compact ceiling speaker, 6W, metal	LCZ-UM06-IN
b. Ceiling speaker, 6W, metal	LC3-UM06-IN
c. Ceiling speaker, 20W, metal	LCZ-UM20-IN

Other accessories

Volume control units	CTN
a. Volume control unit, 12W	LM1-VC12P-IN
b. Volume control unit, 36W	LM1-VC36P-IN

4 Installation

To install the Class-D amplifier:

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.
3. Connect any additional equipment. Refer to *Connect the inputs of the mixer amplifier, page 15* and *Connect the outputs of the mixer amplifier, page 17*.
4. Check the settings. Refer to *Rear panel settings for the mixer amplifier, page 20*.
5. Make sure the power switch is in the OFF condition.
6. Connect the power cord to the mains connector and plug it into the mains outlet.
7. Remove the plastic film from the battery slot of the remote control.

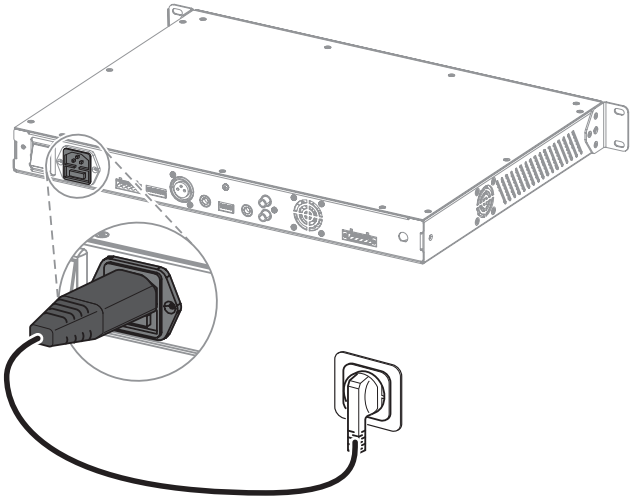


Figure 4.1: Power connection

5 Connection

5.1 Connect the inputs of the mixer amplifier

5.1.1 Priority microphone (input 1)

Connect the PLENA call station PLE-1CS or PLE-1SCS (or a generic call station) that it can be used with push-to-talk to the microphone/line input 1. The PTT mode can be activated by setting the DIP switch at the rear of the unit. Refer to *Rear panel settings for the mixer amplifier, page 20*.
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.

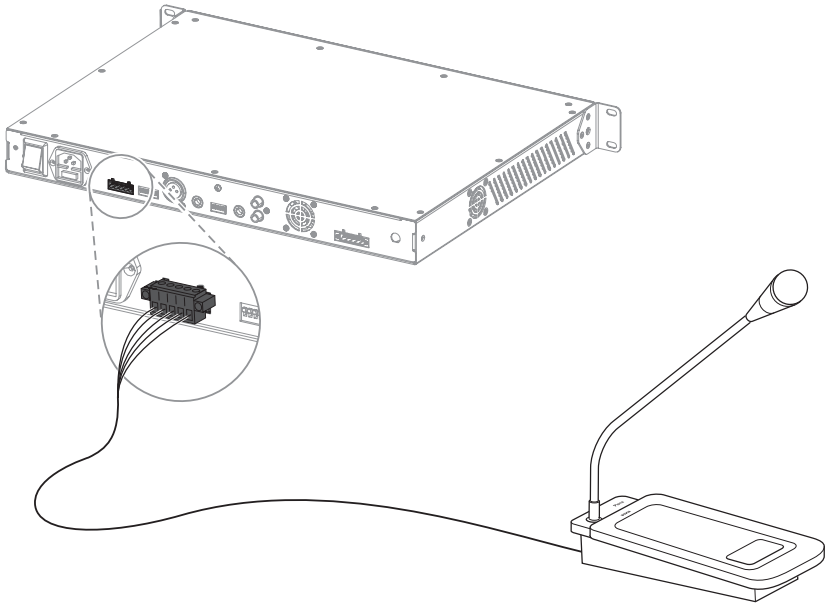


Figure 5.1: Euro connector with trigger

5.1.2 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 *Rear panel settings for the mixer amplifier, page 20*.

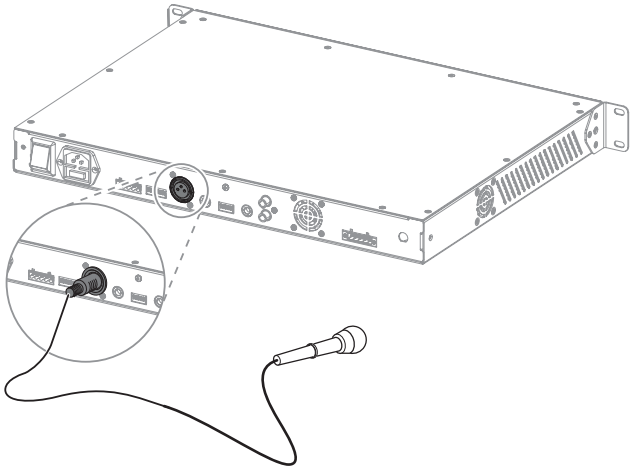


Figure 5.2: Connecting microphone to XLR connector

5.1.3 Additional microphones (inputs 3 and 4)

Connect additional microphones to microphone/line inputs 3 and 4 as required. These microphones mix with the background music.

Set the DIP switch settings between connector for microphone/lines-3 and 4, as required. Refer to *Rear panel settings for the mixer amplifier, page 20*.

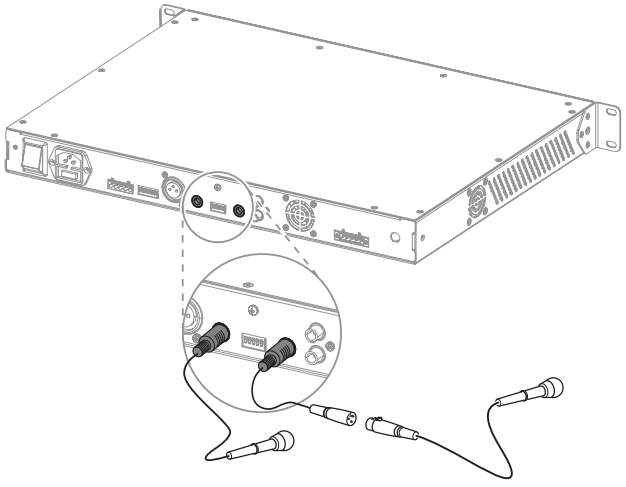


Figure 5.3: Connecting microphone inputs

5.1.4 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.

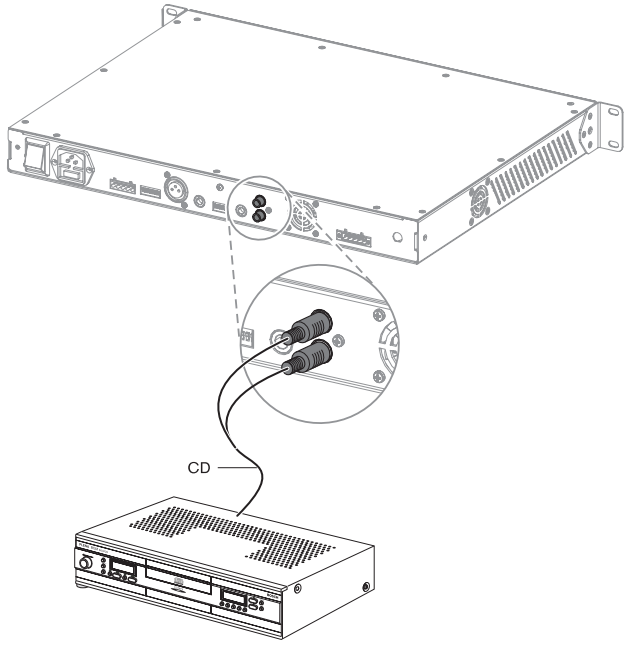


Figure 5.4: Connecting music source inputs

5.2 Connect the outputs of the mixer amplifier

5.2.1 Main output

Connect speakers to the 100 V or 4 Ohm terminal on the screw terminal connector (11) at the rear of the unit. Refer to *Rear panel, page 11*.
Also refer to *Constant voltage loudspeakers, page 17* and *Low impedance loudspeakers, page 18*.

5.2.2 Call only

Connect speakers to the call only 100 V terminal on the screw terminal connector (11) at the rear of the unit. Refer to *Rear panel, page 11*.
Also refer to *Constant voltage loudspeakers, page 17* and *Low impedance loudspeakers, page 18*.

5.2.3 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.

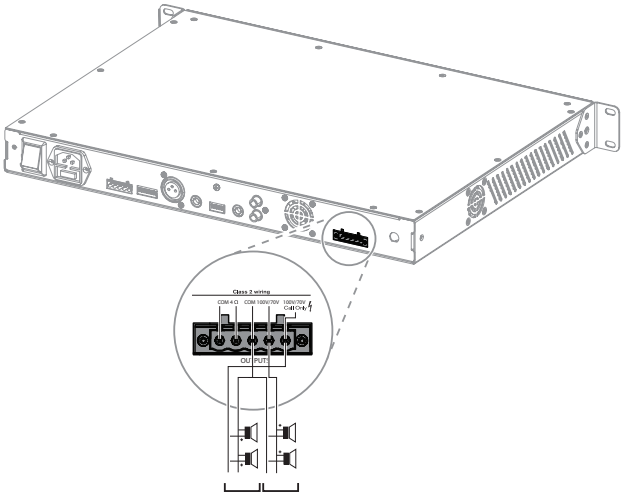


Figure 5.5: Connecting constant voltage loudspeakers

5.2.4 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.

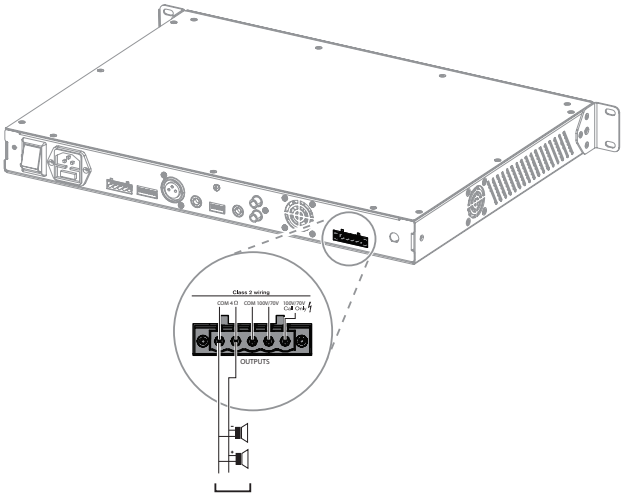


Figure 5.6: Connecting low impedance loudspeakers

5.3 Connect the inputs and outputs of the power amplifier

The power amplifiers have:

- Balanced line inputs with loop-through facility
- A 100 V slave input to connect to existing loudspeaker lines
- 70 V and a 100 V constant voltage outputs
- A low-impedance output for 4 Ohm.

The amplifiers are protected against overload and short circuits.

5.3.1 Connect the line input and loop-through

The power amplifiers have a balanced line input for connection to a pre-amplifier or to a mixer. In case more power is needed, connect the amplifier to another amplifier with the loop-through connection. Each amplifier must be connected to its own set of loudspeakers. Do not connect booster outputs to one another.

Volume control

Use the volume control next to the slave input to set the output level of the power amplifier.

5.3.2 Connect the 100 V slave input

The amplifiers have a 100 V slave input to connect to an existing 100 V loudspeaker line. This makes it easy to connect an additional power amplifier on a remote location for more output power.

5.3.3 Connect the constant voltage loudspeakers

The amplifiers can drive 100 V constant voltage loudspeakers at full power (100 V) and half-power (70 V). Connect the loudspeakers in parallel. Check the loudspeaker polarity for in-phase connection. The sum of the loudspeaker power must not exceed the rated amplifier power.

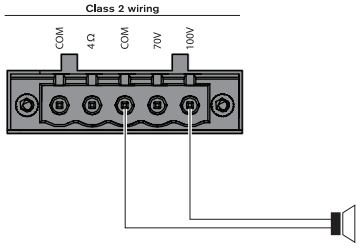


Figure 5.7: 100 V output

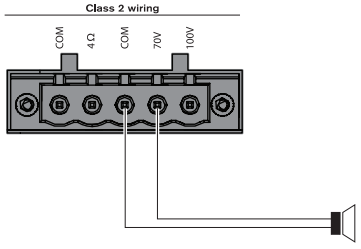
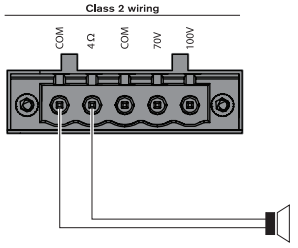


Figure 5.8: 70 V output

5.3.4 Connect the low-impedance loudspeakers

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

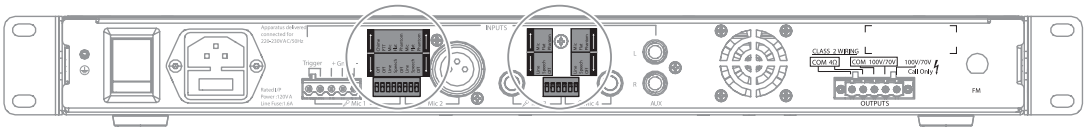


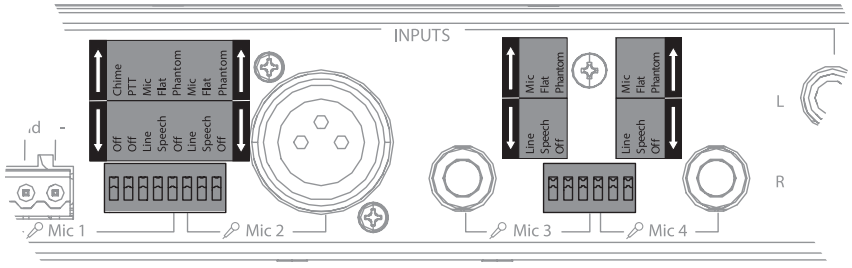
6 Configuration

6.1 Rear panel settings for the mixer amplifier

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





6.2 70 V output (internal settings)

The output voltage of priority-controlled outputs and call only can be set from 100 V to 70 V during installation. Change the jumper wire inserted from J19 to J18 (100 V) to J19 to J17 (70 V) on the main PCB.

Caution!

Only the installer can make internal changes.

7 Operation

7.1 Switch ON

Press the rocker switch on the rear panel of the device to turn it ON.
With the power on, the ON LED on the front panel is green.

7.2 Switch OFF

Press the rocker switch on the rear panel of the device to turn it OFF.
With the power off, the ON LED on the front panel is off.

7.3 Microphone/line controls

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

7.4 Volume control

Use the AUX/Music source volume control to control the sound level of the AUX input and of the Music input for FM/BT/USB inputs.

7.5 Tone control

The tone controls can be used as a traditional tone control with high and low control.
Use the Treble and Bass tone controls to change the tone.

7.6 Master volume control

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

7.7 LED indications

Mixer amplifier

LED	Color	Status
ON	Green	Indicates that the device is on.
Fault	Red	Indicates an overload or output short circuit.
Clip	Orange	Indicates that the device is operating at half-power due to the increased temperature of the power amplifier chip. When the amplifier is continuously operated at peak power instead of Music power or overdriven, the internal temperature increases, causing the amplifier to operate at half-power mode. This enables the user to operate the device for an extended period before it shuts down due to Over Temperature.
Call	Green	Indicates the PTT trigger for the "Call Only" output on MIC-1.

Power amplifier

LED	Color	Status
ON	Green	Indicates that the device is on.
Fault	Red	Indicates an overload or output short circuit.

LED	Color	Status
Clip	Orange	Indicates that the device is operating at half-power due to the increased temperature of the power amplifier chip. When the amplifier is continuously operated at peak power instead of Music power or overdriven, the internal temperature increases, causing the amplifier to operate at half-power mode. This enables the user to operate the device for an extended period before it shuts down due to Over Temperature.
Signal	Green	Indicates the presence of an input signal.

8 Music source module operation

8.1 Front panel

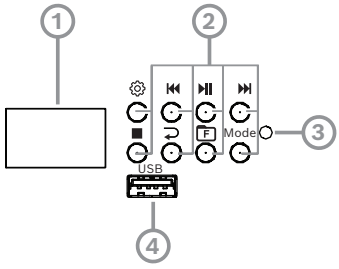
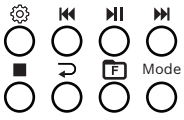


Figure 8.1: Front panel

1. LCD display
2. Keyboard function selection buttons
3. IR remote sensor
4. USB connector

8.1.1 Button function description



SETTINGS

Press to open the settings menu.

PREVIOUS

Short press to go the previous track.
Long press to rewind the track being played.
In FM mode, short press to change to the previous station.

PLAY/PAUSE

Press to pause the track being played.
Press while in pause mode to resume payback.
In FM mode, long press for auto scan.

NEXT

Short press to go to the next track.
Long press to fast-forward the track being played.
In FM mode, short press to change to the next station.

STOP

Press to stop the track being played.

REPEAT

Press to switch between Repeat one, Repeat folder, Repeat all:

- Repeat one: replays the current audio file.
- Repeat folder: repeats all the audio files in the current folder.
- Repeat all: repeats all the audio files in all the folders in sequence.

This button also has the following play modes:

- Normal: plays all audio files in sequence once.

– Random: plays all audio files randomly.
– Intro: plays a few seconds of an audio file.

FOLDER

Press to navigate the folders of your device containing audio files.

MODE Mode

Press the button to switchover between the following modes: USB/AUX/FM/BT.

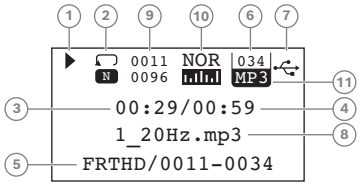
8.2 Music source module modes

When the amplifier is turned on, the home screen (shown below) appears on the display.

8.2.1 USB mode

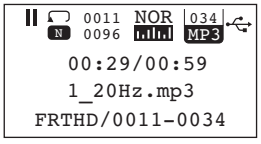
▸ Plug an USB pen drive into the USB port.
⇨ The device goes automatically into USB mode.

In this mode, when an audio track is being played, the below screen will appear.



1. Play icon
2. Repeat mode (normal mode)
3. Playing time
4. Total time
5. Folder details
6. Bit rate
7. USB mode symbol
8. Current track name
9. Current track number and total number of tracks
10. Equalizer - normal
11. File type

When an audio track is in pause, the below screen will appear.



Press the PLAY/PAUSE key to resume the current track.
To quit the USB mode, press the MODE key.
If you enter the USB mode again, the USB pen drive will automatically be detected and the track that was playing before quitting this mode will be played.

If you remove the USB pen drive from the USB port during playback, the display will go back to the home screen

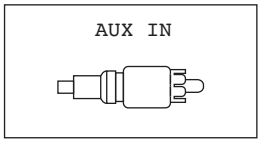
Notice!
If an USB is connected, the device starts in USB mode by default.

Notice!
Due to the great variety of USB pen drives manufacturer's specifications, the memory devices might not have the same performance.
Format the USB with the file system specified in this manual in order for the files to be read correctly and for the device to work properly.

8.2.2 Aux-IN mode

- From the home screen, press the MODE key to enter the Aux-In mode.

⇨ The below screen appears.



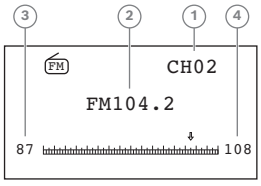
Connect any auxiliary device like a CD player to the Aux-In interface (9) on the rear panel of the amplifier. Refer to *Rear panel, page 11*.
To quit the Aux-In mode, press the MODE key.

8.2.3 FM mode

- From the home screen, press the MODE key to enter the FM mode.

⇨ The device will tune to a stored radio station.

Use ⏮ or ⏭ to choose a radio station to listen to.
In this mode, when a radio station is being played, the below screen will appear. In this example, channel 02 is being played.



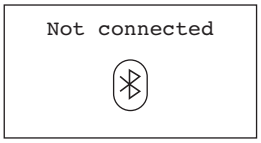
1. Channel
2. FM station frequency
3. Minimum frequency
4. Maximum frequency

To quit the FM mode, press the MODE key.

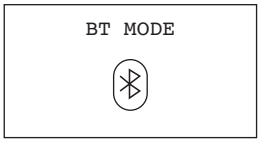
Notice!
The FM antenna cable acts as an antenna in FM mode. Please be sure to plug the cable when you are searching for channels or else no radio stations will be found.

8.2.4 BT mode

From the home screen, press the MODE key to enter the BT mode.
When the amplifier is in BT mode and no external device (e.g. mobile phone/PC) is paired, the below screen will appear.



When an external device is paired with the amplifier, the below screen will appear.



To connect the amplifier to an external Bluetooth device:

1. Turn on the Bluetooth in the external device.
   The external device will auto scan for available Bluetooth devices.
2. Press “BOSCH PLENA AMPLIFIER” from the list of devices shown to connect.
   The module display will change to “BT MODE”. You can now play music from the external device.

Notice!
For better performance, place the Bluetooth device within 5 meters of the amplifier.

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

Notice!
The USB mode is the default. After a power cycle, the device, operating in BT mode, starts automatically as USB mode if a USB pen is connected. Otherwise, it displays the home screen. Press the MODE key to enter the BT mode.

8.3 Music source module specifications

USB specifications

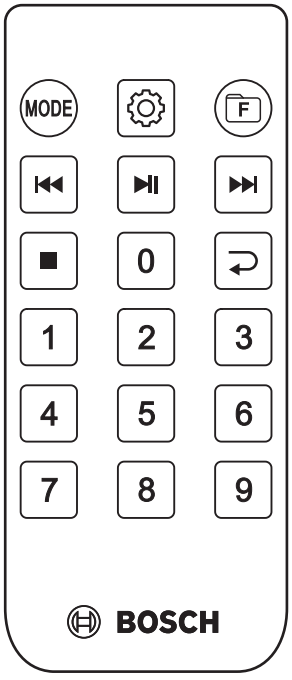
One USB 2.0 4-pin connector acts as a host controller that can operate with a memory device up to 32GB. The output current redundancy limiter is at 500mA max @5V. It can only support a memory device, it cannot support an SDIO device.

- Playable layers: The directory layers can support up to 8 levels.
- Maximum supported songs: 8000 songs.
- Maximum supported folders (255).
- Supported audio formats: MP3 and WAV files with bit rates from 32 kbps.
- File systems: FAT32.

Notice!
For better performance of the amplifier, we recommend to store only the supported audio files in the USB card.

8.4 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 and FM station selection.

9 Technical data

9.1 Class-D mixer amplifier

Electrical

Mains power supply	
Input voltage (VAC)	230 VAC
Inrush current (A)	35 A
Power consumption (VA) (maximum)	PLE-1ME060-4IN: 165 VA PLE-1ME120-4IN: 280 VA PLE-1ME240-4IN: 580 VA
Performance	
Rated output (RMS) (W)	PLE-1ME060-4IN: 60 W PLE-1ME120-4IN: 120 W PLE-1ME240-4IN: 240 W
Frequency response (Hz) (+1/-3 dB)	70 Hz – 18,000 Hz @ -10 dB of rated output power
Total harmonic distortion (%)	< 1% @ rated output power
Bass control (dB)	+/- 8 dB
Treble control (dB)	+/- 8 dB

Inputs and outputs

MIC / Line input 1-4	
Connector type - input 1	5-pin Euroblock, balanced, phantom
Connector type - input 2	3-pin female XLR, balanced phantom
Connector type - input 3 and 4	1/4" TRS jack, balanced
Sensitivity (mV) - MIC	1 mV
Sensitivity (mV) - Line	200 mV - 300 mV
Input impedance (kΩ) - MIC	> 1 kΩ
Input impedance (kΩ) - Line	> 5 kΩ
Minimum signal-to-noise ratio (dB) - MIC	≥ 60 dB
Minimum signal-to-noise ratio (dB) - Line	≥ 65 dB
Headroom (dB)	> 20 dB
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct.
Phantom power supply (MIC)	9 V with 2.2 kΩ
AUX input	
Connector type	RCA

Sensitivity (mV)	200 mV - 300 mV
Input impedance (kΩ)	22 kΩ
Minimum signal-to-noise ratio (dB)	65 dB
Headroom (dB)	20 dB
Loudspeaker output 70 V / 100 V	
Connector type	Phoenix connector (1x5)
Maximum output voltage (V)	141 V
Loudspeaker output 4 Ω	
Connector type	Phoenix connector (1x5)
Maximum output voltage (V)	PLE-1ME060-4IN: 21.9 V PLE-1ME120-4IN: 31 V PLE-1ME240-4IN: 43.6 V
Rated output voltage (V)	PLE-1ME060-4IN: 15.5 V PLE-1ME120-4IN: 21.9 V PLE-1ME240-4IN: 30.9 V

Mechanical

Dimensions (H x W x D) (mm)	44 mm x 430 mm x 346 mm
Weight (kg)	PLE-1ME060-4IN: 5.2 kg PLE-1ME120-4IN: 5.9 kg PLE-1ME240-4IN: 7.2 kg
Color (RAL)	RAL 9017 Traffic black
Mounting type	Rack-mounted; Tabletop
Rack unit (U)	1 U (19 in)

Environmental

Operating temperature (°C)	-5 °C – 45 °C
Storage temperature (°C)	-20 °C – 70 °C
Operating relative humidity, non-condensing (%)	< 95%

9.2 Class-D power amplifier

Electrical

Mains power supply	
Input voltage (VAC)	230 VAC
Inrush current (A)	35 A
Power consumption (VA) (maximum)	PLE-1P120-4IN: 290 VA PLE-1P240-4IN: 580 VA

Performance	
Rated output (RMS) (W)	PLE-1P120-4IN: 120 W PLE-1P240-4IN: 240 W
Frequency response (Hz) (+1 / -3 dB)	70 Hz – 18,000 Hz @ -10 dB of rated output power
Total harmonic distortion + noise (%)	< 1% @ rated output power
Minimum signal-to-noise ratio (dB)	> 70 dB

Inputs and outputs

Lines inputs	
Connector type	1/4" TRS jack; 3-pin female XLR
Sensitivity (V)	1 V
Input impedance (kΩ)	> 5 kΩ
Common-mode rejection ratio (dB)	25 dB
Gain (dB)	40 dB
70 V / 100 V input	
Connector type	Phoenix connector (1x2)
Sensitivity (V)	100 V
Input impedance (kΩ)	40 kΩ
Line loop-through output	
Connector type	3-pin male XLR
Nominal level (V)	1 V
Impedance	Direct connection to line input
Loudspeaker outputs	
Connector type	Phoenix connector (1x5)
Direct output	4 Ω; 100 V; 70 V

Mechanical

Dimensions (H x W x D) (mm)	44 mm x 430 mm x 334 mm
Weight (kg)	PLE-1P120-4IN: 5.9 kg PLE-1P240-4IN: 7.2 kg
Color (RAL)	RAL 9017 Traffic black
Mounting type	Rack-mounted; Tabletop
Rack unit (U)	1 U (19 in)

Environmental

Operating temperature (°C)	-5 °C – 45 °C
Storage temperature (°C)	-20 °C – 70 °C
Operating relative humidity, non-condensing (%)	< 95%

10 Certification and approvals

The Class-D mixer and power amplifiers are certified as follows:

Certified for	According to
Safety	IEC 62368-1
Vibration and shock	IEC 60028-2-6; IEC 60068-2-27
Transport	ISTA 2A 2008
EMC emission	CISPR 32
EMC immunity	CISPR 35; IEC 61000-4-3

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