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# PLE-1Pxx0-EU Plena Amplifier

- **120 and 240 W power amplifier in a compact housing**
- **1 V line level balanced input**
- **70 V, 100 V and 8 ohm outputs**
- **100 V input for slave operation on 100 V speaker line**
- **Temperature-controlled forced front to back ventilation (directly stackable)**
- **24 VDC backup power with built in charger**

The PLE-1P120-EU and PLE-1P240-EU are two high-power plug-and-play cost effective power amplifiers that deliver 120 and 240 Watts to constant voltage or 8 ohm loads. Built with premium quality and protections, they offer basic functionality at a budget price. The amplifiers offer straight 1 V and 100 V line in, and 70 V, 100 V and 8 ohms out. They can extend the power of the PLE- series mixer amplifiers or be combined with the PLE-10M2-EU mixer, or work anywhere where more power on an existing 100 V line is needed or when a line level signal is provided.

## Functions

### Protection

The amplifier is protected against overload and short circuits. A limiter protects the amplifier and loudspeaker against accidental overdriving. A temperature-controlled fan ensures proper cooling without producing acoustic noise at lower output levels.

### Power input and output

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover. The amplifier also has a built-in charger to charge the connected battery. The system has a balanced input and loop-through facility. This makes it easy to connect multiple amplifiers. The secondary input is a 100 V line input to connect the amplifier to a 100 V loudspeaker line to provide more power in remote locations.

Gain or level control is located on the rear of the unit to avoid accidental setting change. A meter with LED bar shows the output level.

The amplifier has a 70 V or 100 V output for constant voltage loudspeaker systems, and a low impedance output for 8 ohm loudspeaker loads.

### Controls and indicators

**Front**

- Power on LED
- LED VU meter for master output (LEDs for -18, -12 -6, -3, 0 dB)
- On/off button

**Back**

- Level control

### Interconnections

See Technical Specifications.

## Certifications and Approvals

| | |
|---|---|
| Safety | acc. to EN 60065 |
| EMC emission | acc. to EN 55103-1 |
| EMC immunity | acc. to EN 55103-2 |

## Installation/Configuration Notes

*Rear view*

## Parts Included

| Quantity | Components |
|---|---|
| 1 | PLE-1P120-EU or PLE-1P240-EU Plena Mixer Amplifier |
| 1 | Power cord |
| 1 | Manual |
| 1 | Set of 19”mounting brackets |

## Technical Specifications

### Electrical

**Mains power supply**

| | |
|---|---|
| Voltage | 115 - 230 VAC ±10%, 50/60 Hz |
| Inrush Current PLE-1P120-EU | 4.5/9 A (230/115 VAC) |
| Inrush Current PLE-1P240-EU | 9/18 A (230/115 VAC) |
| Power consumption PLE-1P120-EU | 380 VA |
| Power consumption PLE-1P240-EU | 760 VA |

**Battery power supply**

| | |
|---|---|
| Voltage | 24 VDC, +10% / -15% |
| Current PLE-1P120-EU | 5.5 A |
| Current PLE-1P240-EU | 11 A |
| Charge current | 0.5 ADC |
| Charge float voltage | 27.3 VDC |

**Power consumption (PLE-1P120-EU)**

| | |
|---|---|
| Max power (mains) | 227 W |
| -6dB (mains) | 130 W |
| Idle (mains) | 12 W |
| Max power (24 V) | 7 A (150 W) |
| -6 dB (24 V) | 4.4 A (194 W) |
| Idle (24 V) | 0.3 A (7 W) |

**Power consumption (PLE-1P240-EU)**

| | |
|---|---|
| Max power (mains) | 451 W |
| -6dB (mains) | 244 W |
| Idle (mains) | 16 W |
| Max power (24 V) | 12 A (290 W) |
| -6 dB (24 V) | 8.1 A (194 W) |
| Idle (24 V) | 0.3 A (7 W) |

**Performance**

| | |
|---|---|
| Max / rated power PLE-1P120-EU | 180 W / 120 W |
| Max / rated power PLE-1P240-EU | 360 W / 240 W |
| Power reduction on backup power | -1 dB |
| Frequency response | 50 Hz to 20 kHz (+1/-3 dB @ -10 dB ref. rated output) |
| Distortion | <1% @ rated output power, 1 kHz |

**Inputs**

| | |
|---|---|
| Connector 1 | 3-pin XLR, balanced |
| Sensitivity | 1 V |
| Impedance | 20 kohm |
| Connector 2 | 3-pin Euro style, balanced |
| Sensitivity | 100 V |
| Impedance | 300 kohm |
| Dynamic range | 100 dB |
| CMRR (mic) | >40 dB (50 Hz to 20 kHz) |

**Loudspeaker outputs 70 V / 100 V**

| | |
|---|---|
| Connector | Euro style pluggable screw terminals |

**Loudspeaker output 8 ohm**

| | |
|---|---|
| Connector | Euro style pluggable screw terminals |
| PLE-1P120-EU | 31 V (120 W) |
| PLE-1P240-EU | 44 V (240 W) |

### Mechanical

| | |
|---|---|
| Dimensions (H x W x D) | 100 x 430 x 270 mm (19" wide, 2U high) |
| Mounting | Stand-alone, 19" rack |
| Color | Charcoal |
| Weight (PLE-1P120-EU) | Approx. 10.5 kg |
| Weight (PLE-1P240-EU) | Approx. 12.5 kg |

### Environmental

| | |
|---|---|
| Operating temperature | -10 ºC to +45 ºC |
| Storage temperature | -40 ºC to +70 ºC |
| Relative humidity | <95% |
| Acoustic noise level of fan | <40 dB SPL @ 1 m temperature controlled |

## Ordering Information

| | |
|---|---|
| **PLE-1P120-EU Plena Amplifier**<br>120 W, 100V / 70V power amplifier | **PLE-1P120-EU** |
| **PLE-1P240-EU Plena Amplifier**<br>240 W, 100V / 70V power amplifier | **PLE-1P240-EU** |

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# Plena Easy Line Power Amplifier

Security Systems

en

Installation and User Instructions

PLE-1P120-EU

PLE-1P240-EU

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# Important safeguards

Before installing or operating this product, always read the Safety Instructions, which are available as a separate document (9922 141 7014x). These instructions are supplied together with all equipment that can be connected to the mains.

Thank you for choosing a Bosch Security Systems product!

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# 1 Introduction

## 1.1 Purpose

The purpose of these Installation and User Instructions is to provide information required for installing, configuring and operating a Plena Power Amplifier.

## 1.2 Digital document

These Installation and User Instructions are also available as a digital document in the Adobe Portable Document Format (PDF).

## 1.3 Intended audience

These Installation and User Instructions are intended for installers and users of a Plena system.

## 1.4 Related documentation

Safety Instructions (9922 141 1036x).

## 1.5 Alerts

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

- **Note**
  Alert containing additional information. Usually, not observing a note alert does not result in damage to the equipment or personal injuries.
- **Caution**
  The equipment can be damaged if the alert is not observed.
- **Warning**
  Persons can be (severely) injured, or the equipment can be seriously damaged, if the alert is not observed.
- **Danger**
  Not observing the alert can result in death.

## 1.6 Icons

### 1.6.1 Note icons

The icons used in combination with Notes provide extra information about the Note. See the following examples:

**Note**
General icon for notes.

**Note**
Consult the indicated source of information.

### 1.6.2 Caution, Warning, and Danger icons

The icons used in combination with Caution, Warnings, and Dangers indicate the type of hazard present. See the following examples:

**Caution, Warning, Danger**
General icon for Cautions, Warnings and Dangers.

**Caution, Warning, Danger**
Icon for risk of electric shock.

**Caution, Warning, Danger**
Icon for risk of electrostatic discharge.

## 1.7 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 following information.

*table 1.1: Conversion of units of length*

| | | | |
|---|---|---|---|
| 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 1.2: Conversion of units of mass*

| | | | |
|---|---|---|---|
| 1 lb = | 0.4536 kg | 1 kg = | 2,2046 lb |

*table 1.3: Conversion of units of pressure*

| | | | |
|---|---|---|---|
| 1 psi = | 68.95 hPa | 1 hPa = | 0.0145 psi |

**Note**
1 hPa = 1 mbar.

*table 1.4: Conversion of units of temperature*

| | |
|---|---|
| $°F = \frac{9}{5} . (°C + 32)$ | $°C = \frac{5}{9} . (°F_ 32)$ |

# 2 Description

## 2.1 The Plena product range

The Plena Easy Line Power Amplifier is part of the Plena product range. Plena 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 to create public address systems tailored for virtually any application.

The Plena product range includes:
- mixers
- preamplifiers
- power amplifiers
- a music source unit
- a 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.

## 2.2 Contents of box

The packaging box contains the following contents:
- PLE-1P120-EU, or PLE-1P240-EU
- Power cord
- Mounting brackets (LBC 1901/00)
- XLR cable

## 2.3 The Plena Power Amplifier

The Plena Power Amplifier is a high performance power amplifier for use in professional public address systems. For a schematic overview of the Plena Power Amplifier, see figure 2.1 on the next page.

The Plena Power Amplifier is provided with one line input with a loop through output.
A 100 V slave input gives connection to existing loudspeaker lines. This input is converted to 1 V and fed to the input. The 1 V and 100 V input is summed.

The Plena Power Amplifier has 70 V and 100 V constant voltage output and a low impedance output for 8 Ohm loudspeakers.

The Plena Power Amplifier has an overload and a short-circuit protection. A temperature controlled fan and overheat protection ensures high reliability.
An LED meter monitors the master output. This signal is also present on the headphone socket 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.

The unit has 24 VDC backup input with built in 24 VDC battery charger. A separate battery charger is, therefore, not required. The charger charges the battery with a 0.5 A constant current until the battery voltage reaches 27.4 VDC. The charger then switches over to constant voltage charging (also known as float charging).

**Note**
When using the unit with backup power of 24 V, make sure that the unit is always powered ON. When the unit is switched OFF, the batteries will be drained as this will be regarded as a power source. Consequently the unit will revert to 24 VDC power from the 24 V input.

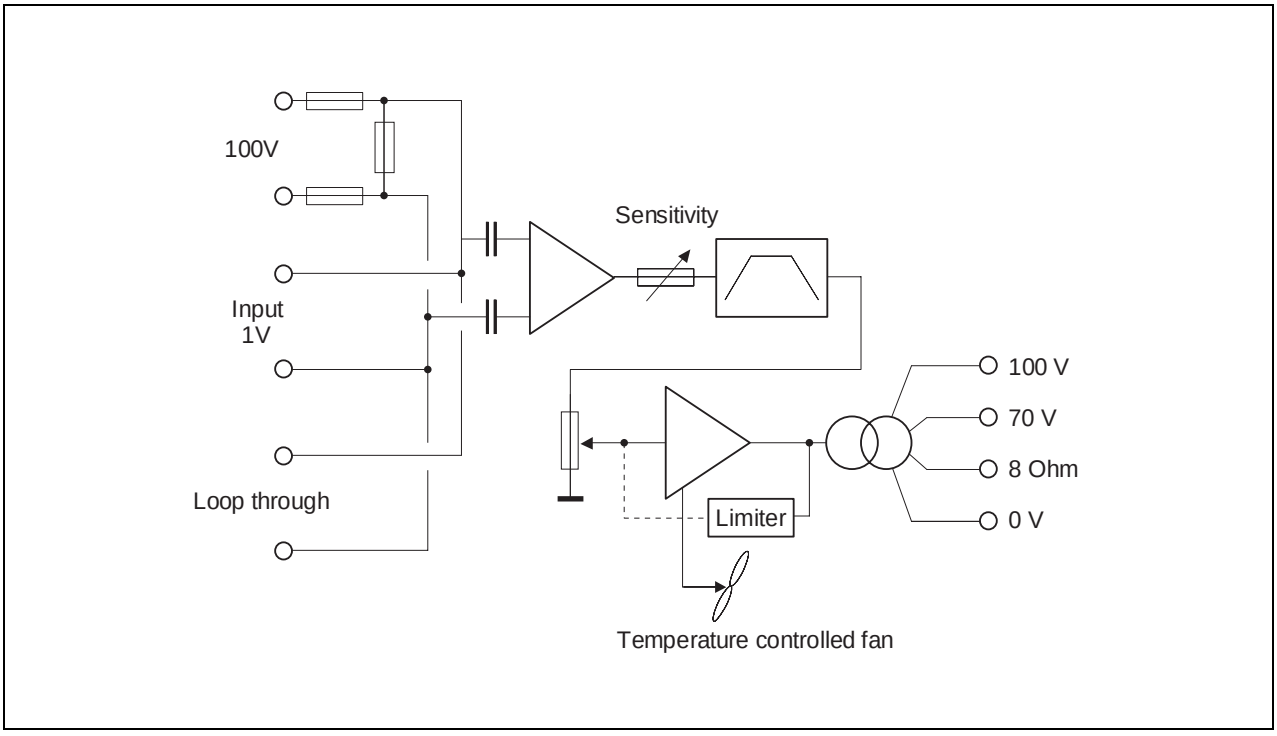


*figure 2.1: Schematic overview of the Plena Power Amplifier*

## 2.4 Controls, connectors and indicators

### 2.4.1 Front panel

See figure 2.2 for an overview of the controls and indicators.

1 Power button.

2 Output level meter (-18 db, 0 db).

3 Air inlet holes.

**Note**
Do not obstruct the airflow into the unit.

4 Headphone socket.

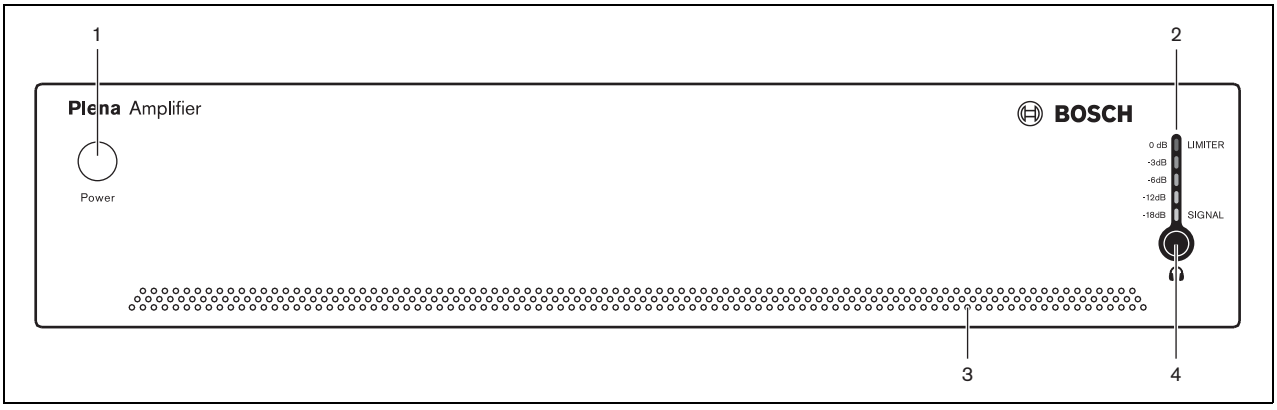


*figure 2.2: Front panel*

### 2.4.2 Rear panel

See figure 2.3 for an overview of the connectors and switches:

1 Cooling fan.

**Note**
Always allow adequate space at the rear of the unit for ventilation.

2 100V input, Euro style pluggable screw terminal connector. Input is wired in parallel with the line input (see number 3).
3 Line input, XLR connector. Input is wired in parallel with 100 V input (see number 2).
4 Input volume control - control range -25 dB to 0dB (see numbers 2 and 3).
5 Loop through output, XLR connector.
6 Outputs and 24 VDC in/out:
- Outputs, Euro style pluggable screw terminal connector - 100 V, 70 V and 8 Ohm.
- 24 VDC in/out:
  - Input: 24 VDC backup power.
  - Output: built in charger, maximum 0.5 A. regulated output current.

7 Mains voltage selector, C13 - 115/230 VAC 50/60 Hz.
8 Mains fuse.
9 Earth connection screw.

**Note**
The unit must be earthed.

10 Mains connector (3-pole).

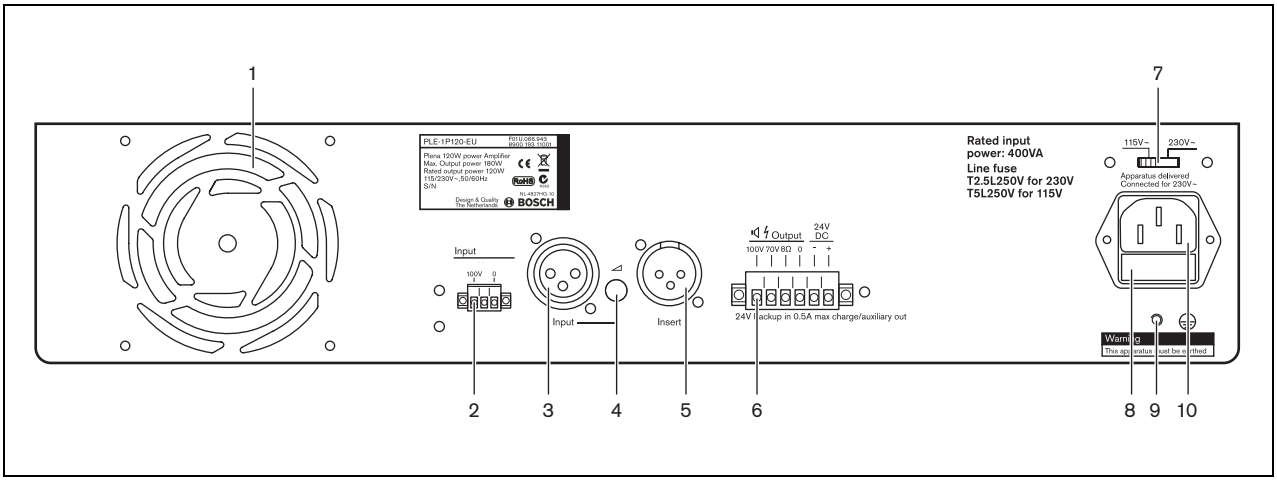


*figure 2.3: Rear panel*

# 3 Installation

## 3.1 Unpack unit

1 Remove the unit from the box, and discard the packaging material according to local regulations.

## 3.2 Install unit in rack (optional)

The Plena Easy Line Power Amplifier is intended for tabletop use, but you can also mount the unit in a 19" rack (see figure 3.1).

If you mount the unit in a rack, you must:

- ensure that it does not exceed the overheating temperature (55 °C ambient).
- use the included Bosch mounting brackets (LBC 1901/00).
- remove the 4 feet from the bottom of the unit.

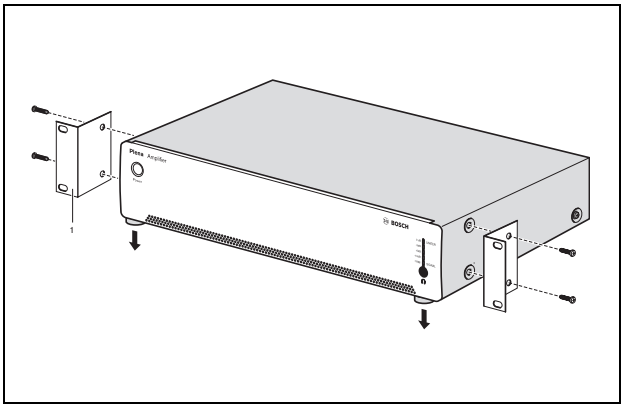

*figure 3.1: Installing the unit in a rack*

## 3.3 Check settings/connections

1 Connect any additional equipment (see section 4.1 and 4.2).

## 3.4 Connect unit to mains

**Caution**
Potential equipment damage. Before connecting power, always check the voltage selector on the rear panel of the unit.

1 Make sure the voltage selector (115/230 VAC) is correctly set for the country's main voltage (see figure 3.2).
2 Make sure the power button on the front of the unit is set to Off.
3 Connect the power cord to the mains connector and plug it into the mains outlet.

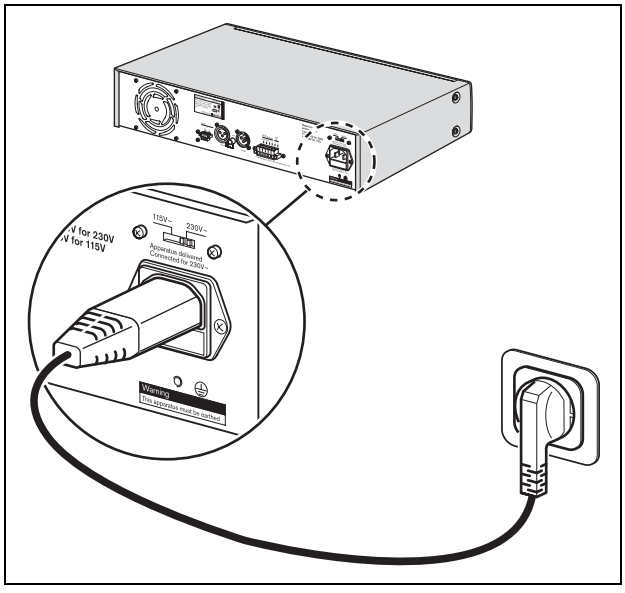

*figure 3.2: Power connection and voltage selector*

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# 4 Connections and settings

## 4.1 Connecting inputs

### 4.1.1 DC supply (battery)

**Caution**
The connection cable must have an in-line fuse. Use the type of fuse shown in the following figure.

**Caution**
Make sure the unit is earthed.

The Plena Power Amplifier has a 24 VDC input (terminal screw). This input can be used in mobile applications, such as boats where 115 or 230 VAC is not available or in applications that must continue to operate in case of a power failure.

When a 24 VDC battery is connected (typically consisting of two 12 VDC lead-acid batteries in series), the unit will operate on the supplied DC voltage.

The Plena Power Amplifier has as a built in charger, which charges the connected battery (or batteries if connected in series). A separate battery charger is, therefore, not required. The charger charges the battery with a 0.5 A constant current until the battery voltage reaches 27.4 VDC. The charger then switches over to constant voltage charging (also known as float charging). This means that a battery can be charged at the same rate it is discharging, and thus full capacity battery can be assured.

This type of charging is suited for low duty-cycle applications where a relatively high current or power is infrequently required.

**Note**
If the backup power system has to comply to the EN54-4 standard or similar standards for backup power and charging speeds, Bosch recommends the PLN-24CH10.
The PLN-24CH10 is a dedicated battery charger and power supply that is fully EN54-4 compliant.

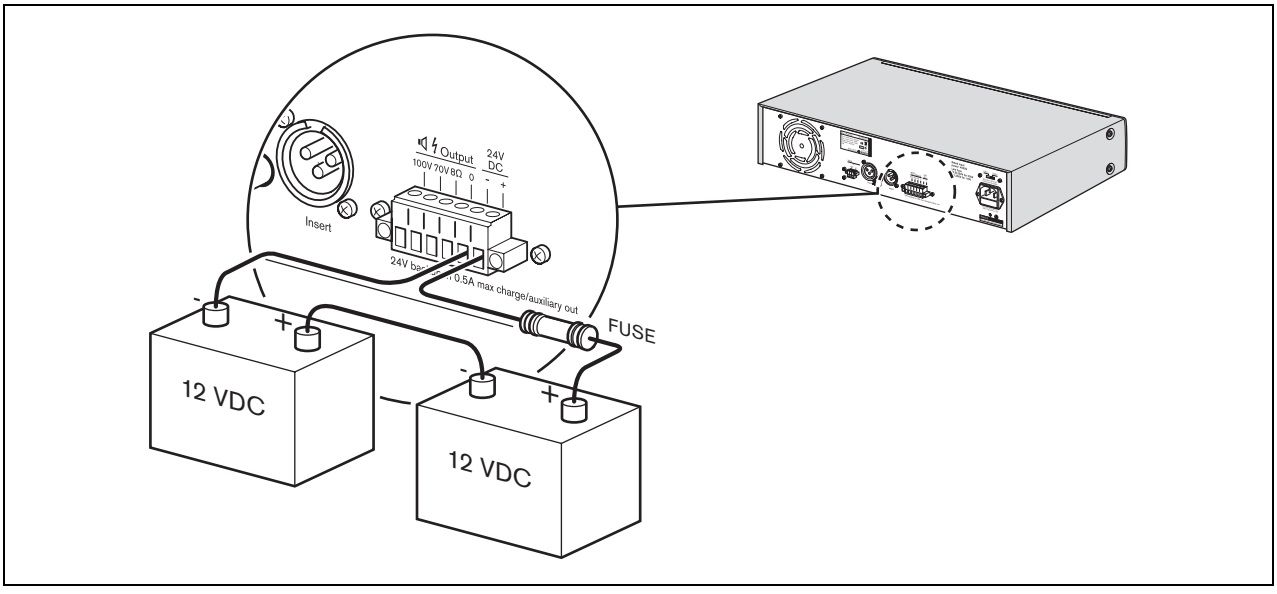


*figure 4.1: Connecting a DC power supply*

### 4.1.2 100 V input

The 100 V input is used to connect directly to a 100 V line (slave operation).

A 100 V input signal can be connected to the Euro style pluggable screw terminal connector (2) at the rear of the unit as shown in figure 4.2.

To adjust the volume of the input signal, turn the input volume control (4) at the rear of the unit.

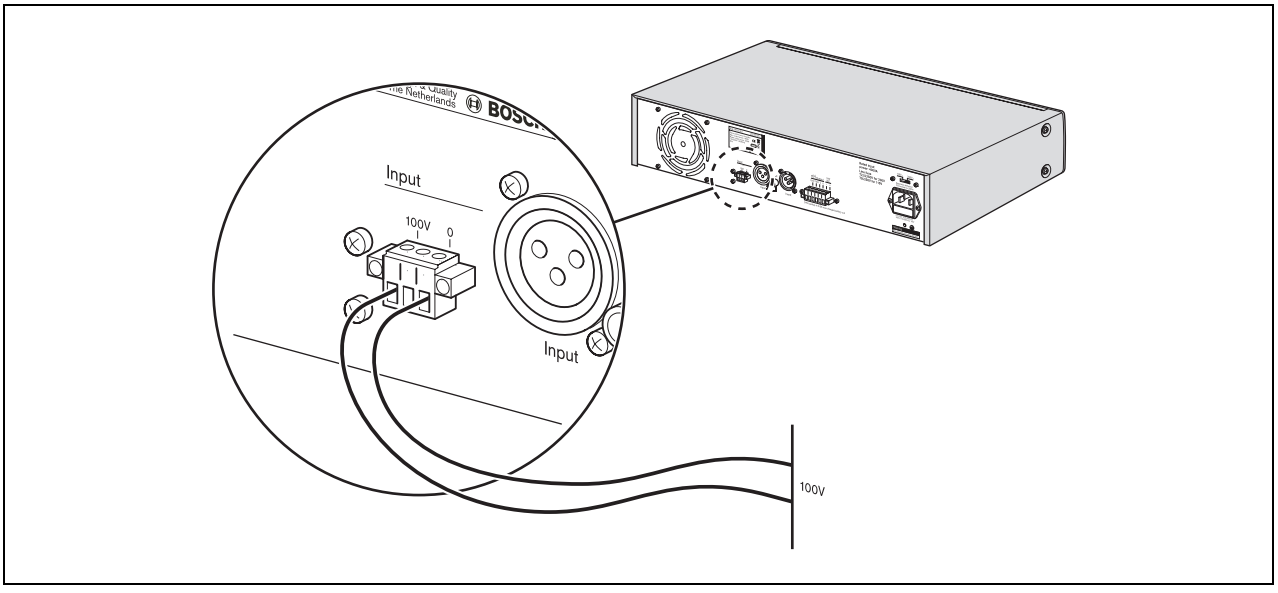


*figure 4.2: Connecting a 100 Volt input signal*

## 4.2 Connecting speakers

Connect speakers to the 70 V, the 100 V or the 8 Ohm terminals on the Euro style pluggable screw terminal connector (6) at the rear of the unit.

### 4.2.1 Constant voltage loudspeakers

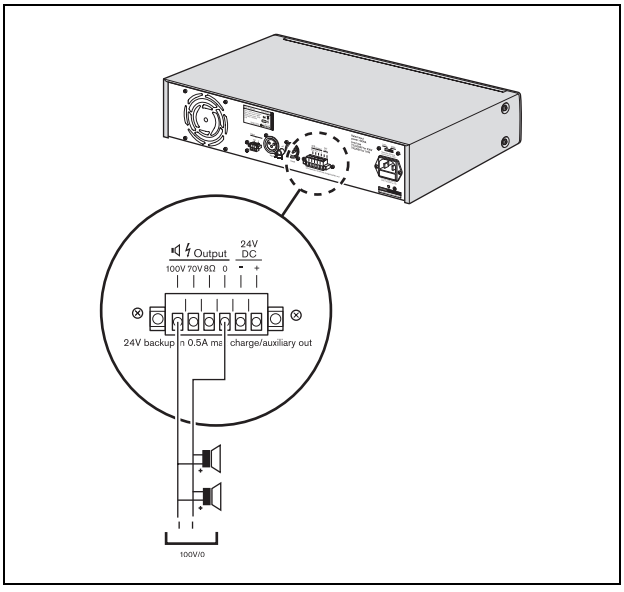


*figure 4.3: Connecting speakers*

The power amplifier can drive 70V and 100 V constant voltage loudspeakers. The 100 V connection in shown in figure 4.3.

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.

### 4.2.2 Low impedance loudspeakers

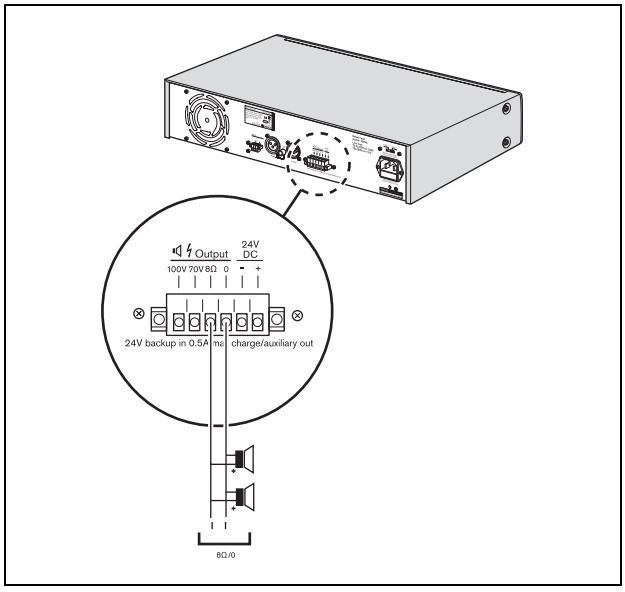


*figure 4.4: Connecting speakers*

Connect low impedance loudspeakers to the 8 Ohm/0 terminals. This output can deliver the rated output power into an 8 Ohm load. Connect multiple loudspeakers in a series/parallel-arrangement to make the combined impedance 8 Ohm or higher. Check the loudspeaker polarity for in-phase connection.

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# 5 Operation

## 5.1 Switch on and off

### 5.1.1 Switch on

**Caution**
Potential equipment damage. Before applying power, always check the mains voltage selector at the rear of the unit.

1 Make sure the mains voltage selector (115/230 VAC) is correctly set for the country's main voltage (see figure 5.1).
2 Set the power button (1) on the front of the unit to On - pushed in.

### 5.1.2 Switch off

Set the power button (1) on the front of the unit to Off - popped out.

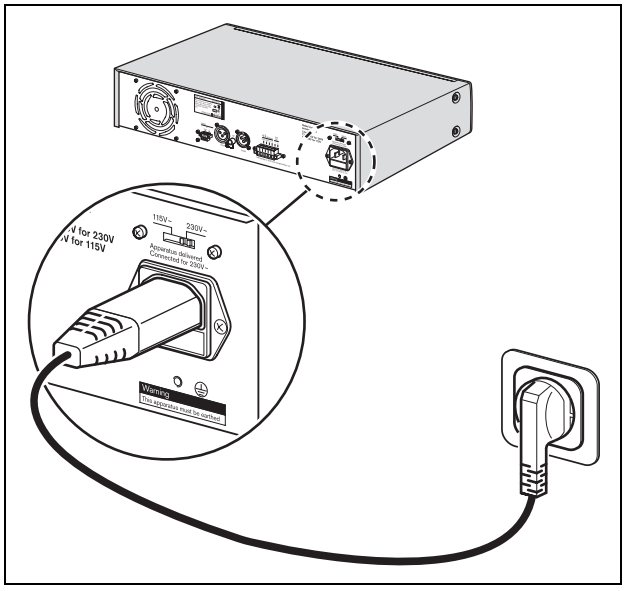


*figure 5.1: Voltage selector*

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# 6 Technical data

## 6.1 Electrical

### 6.1.1 Mains power supply

| |
|---|
| **Voltage** |
| 115 - 230 VAC, ±10%, 50/60 Hz |
| **Inrush Current PLE-1P120-EU** |
| 8/16 A (230/115 VAC) |
| **Inrush Current PLE-1P240-EU** |
| 9/19 A (230/115 VAC) |

### 6.1.2 Battery power supply

| |
|---|
| **Voltage** |
| 24 VDC, ±15% |
| **Current PLE-1P120-EU** |
| 6 A |
| **Current PLE-1P240-EU** |
| 12 A |
| **Charge current** |
| 0.5 ADC |
| **Charge float voltage** |
| 27.4 VDC |

### 6.1.3 Power consumption

| |
|---|
| **PLE-1P120-EU (mains)** |
| 400 VA |
| **PLE-1P240-EU (mains)** |
| 800 VA |

### 6.1.4 Performance

| |
|---|
| **Frequency response** |
| 50 Hz to 20 kHz (+1/-3 dB @ -10 dB ref. rated output) |
| **Distortion** |
| <1% @ rated output power, 1 kHz |

### 6.1.5 Line input - loop through output

| |
|---|
| **Line input** |
| 3-pin XLR, balanced, phantom |
| **Loop through output** |
| 3-pin XLR, balanced, phantom |
| **Sensitivity** |
| 1 V |
| **Impedance** |
| >1 kohm (mic); >5 kohm (line) |
| **S/N** |
| 63 dB |
| **Dynamic range** |
| 100 dB |
| **CMRR** |
| >40 dB (50 Hz to 20 kHz) |

### 6.1.6 100 V input

| |
|---|
| **Connector** |
| 4-pin, Euro style pluggable screw terminal |
| **Sensitivity 100 V** |
| 100 V adjustable |
| **Impedance** |
| >10 kohm |
| **S/N (flat at max volume)** |
| >65 dB |

### 6.1.7 Loudspeaker outputs 70 / 100 V*

| |
|---|
| **Connector** |
| Euro style pluggable screw terminal, floating |
| **Max / rated PLE-1P120-EU** |
| 180 W / 120 W |
| **Max / rated PLE-1P240-EU** |
| 360 W / 240 W |

### 6.1.8 Loudspeaker output 8 ohm*

| |
|---|
| **Connector** |
| Euro style pluggable screw terminal, floating |
| **PLE-1P120-EU** |
| 31 V (120 W) |
| **PLE-1P240-EU** |
| 44 V (240 W) |
| * Subtract 1 dB for 24 V battery operation. |

## 6.2 Mechanical

| |
|---|
| **Dimensions (H x W x D)** |
| 100 x 430 x 270 mm (19" wide, 2U high) |
| **Mounting** |
| Stand-alone, 19" rack |
| **Color** |
| Charcoal |
| **Weight (PLE-1P120-EU)** |
| Approx. 10.5 kg |
| **Weight (PLE-1P240-EU)** |
| Approx. 12.5 kg |

## 6.3 Environmental

| |
|---|
| **Operating temperature** |
| -10 to +55 °C |
| **Storage temperature** |
| -40 to +70 °C |
| **Relative humidity** |
| <95% |
| **Acoustic noise level of fan** |
| <33 dB SPL @ 1 m temperature control |

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Data subject to change without notice

2008-02 | PLE-1P120-EU, PLE-1P240-EUen

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