

Plena Mixer Amplifier



Security Systems

en | Installation and User Instructions
PLE-2MA120-EU
PLE-2MA240-EU

BOSCH

4.1.2 Priority microphone (input 1)

The priority microphone (or a generic call station) that can be used with push to talk (PTT) should be connected to “microphone/line 1 input”. The PTT mode can be activated by setting the DIP switch (4) at the rear of the unit. Microphone/line 1 input has priority over all other microphone/line inputs.

If, however, the “Tel. emergency/100V input” receives a signal, all inputs including microphone/line 1 input will be overruled.

The microphone/line 1 input has two connectors wired in parallel:

- an XLR connector (for a 3 pole microphone), and
- a Euro style pluggable screw terminal connector.

The Euro style pluggable screw terminal connector has a trigger input, which can be used in combination with the Euro and XLR connector.

The priority microphone can be connected to the microphone/line 1 input as follows:

- XLR connector only. See figure 4.2.
- XLR connector with trigger. See figure 4.3.
- Euro connector with trigger. See figure 4.4.
- Euro connector only (without trigger).



Note

If a microphone is connected to both the XLR connector and the Euro connector for the microphone/line 1 input, the input signals will be added together.

Set the DIP switch settings next to the XLR connector for microphone/line 1, as required. See section 4.3.



Note

When connecting an unbalanced line level (200 mV) signal to the microphone/line input, connect it as follows: Signal to pin 2, pin 1 and pin 3 to ground.

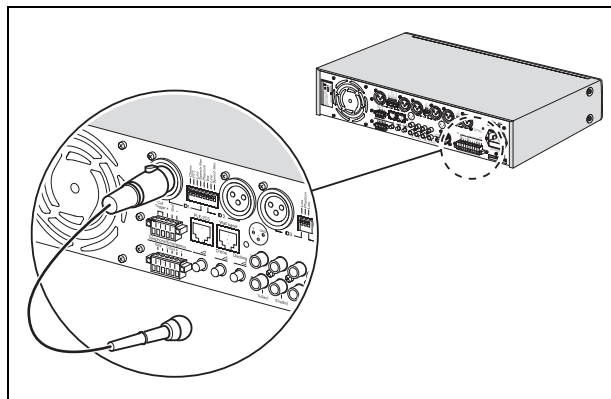


figure 4.2: XLR connector only

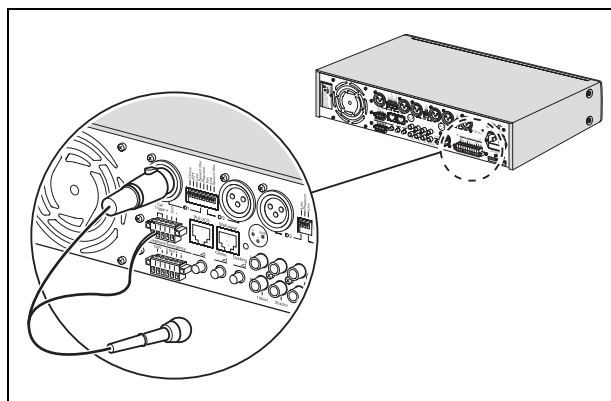


figure 4.3: XLR connector with trigger

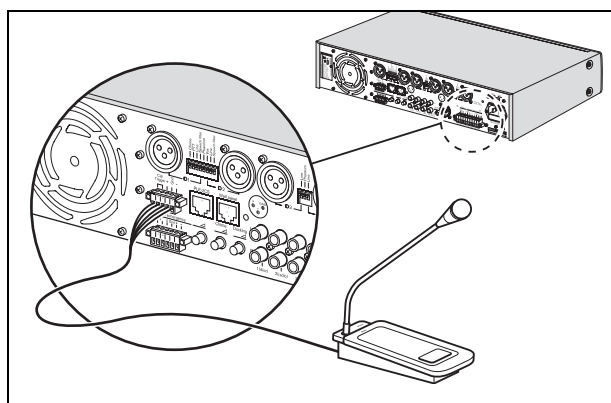


figure 4.4: Euro connector with trigger

4.1.3 Secondary microphone (input 2)

Connect a secondary microphone to “microphone/line input 2”. See figure 4.5.

Microphone/line input 2 has a DIP switch (4) at the rear of the unit for setting the VOX mode. If the DIP switch is set to VOX, the microphone/line input will automatically be switched when a signal is sensed at the microphone/line 2 input. For example, when someone speaks into the microphone, other sound will either be muted or ducked, depending on the setting of the ducking level control at the rear of the unit. See section 4.3.

The Tel. emergency/100V input, Call station input, and Microphone/line input 1 all have priority over the Microphone/line input 2. Therefore, any signal received on any one of these inputs will always be heard regardless of the ducking level control setting for Microphone/line input 2.

Set the DIP switch settings next to the XLR connector as required. See section 4.3.

4.1.4 Additional microphones (inputs 3 through 6)

Connect additional microphones to microphone/line inputs 3 through 6, as required. See figure 4.5. These microphones will mix with the background music.

Set the DIP switch settings next to the XLR connector for microphone/lines 3 through 6, as required. See section 4.3.

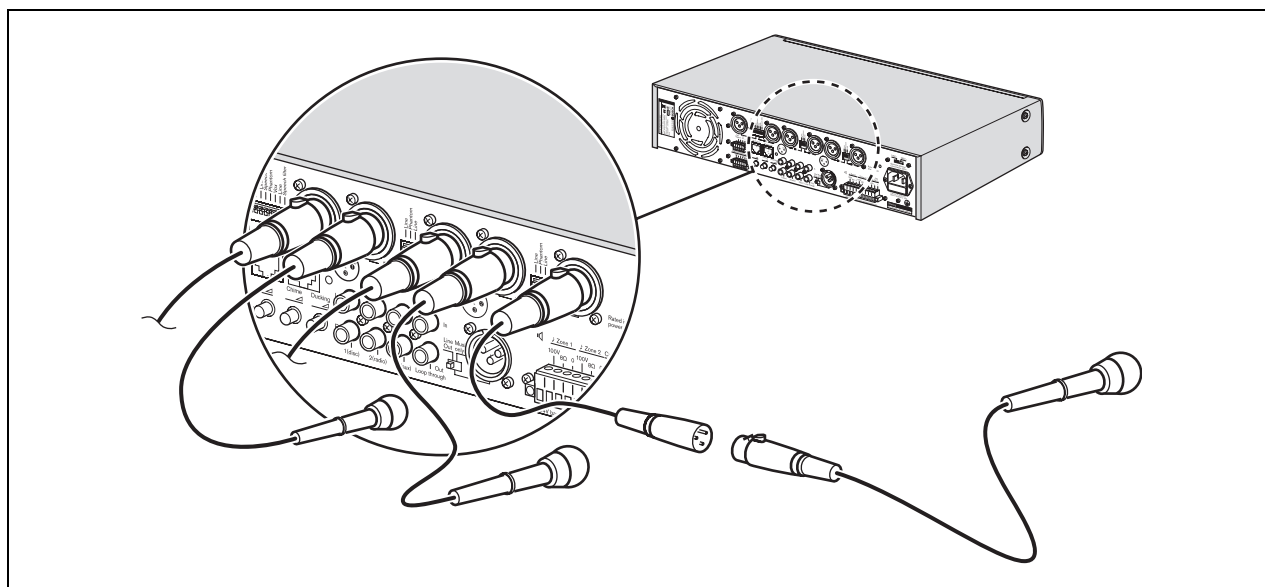


figure 4.5: Connecting microphone inputs

4.1.5 Emergency inputs

The Tel. emergency/100V input, with VOX functionality, is used for receiving emergency announcements or signals (such as a fire alarm). This input has absolute priority, and will overrule all inputs when an emergency announcement or signal is received.

Either a telephone line or a 100 V input signal can be connected to the Euro style pluggable screw terminal connector (13) at the rear of the unit. See section 4.1.5.1 and section 4.1.5.2.



Caution

Never connect telephone lines and a 100 V signal to the Euro style connector at the same time.

To adjust the volume of the emergency announcement or signal, turn the rotary dial (16) at the rear of the unit. For safety reasons, the volume of the emergency announcement or signal cannot be set to zero.

The master volume control setting (7) does not influence the volume setting of the emergency announcement or signal.



Note

Tel. emergency input does not mute the incoming signal so that an incoming pilot tone will be fed to the zone outputs. With this feature it is possible to use the mixer amplifier in a Bosch Voice Alarm System when using end of line boards (PLN-1EOL).

The signal that is delivered to the unit should be quiet when a call is not made. The pilot tone and frequencies below 300 Hz are filtered from the trigger signal so that the input will not trigger from a pilot tone or low frequency rumble.

4.1.5.1 Connecting 100 Volt input signal

Connect the 100 Volt input signal as shown in figure 4.6.

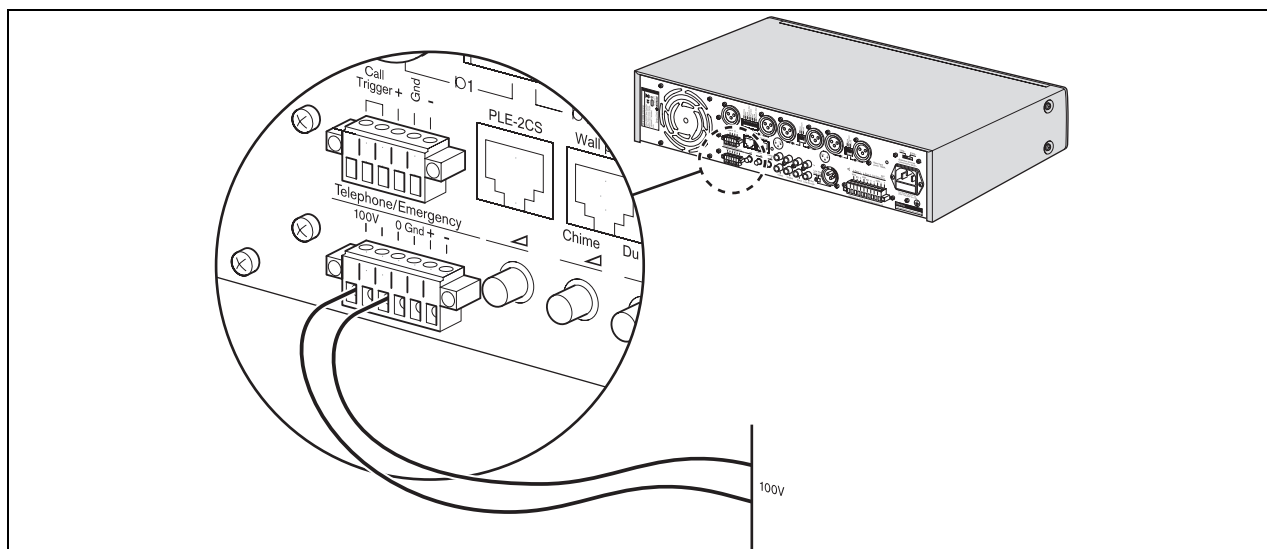


figure 4.6: Connecting 100 Volt input signal

4.1.5.2 Connecting telephone lines

Connect the telephone lines as shown in figure 4.7.



Caution

A connection to a telephone network must always be made via a telephone coupler that provides adequate isolation between the telephone network (PBX) and the Plena system. The telephone coupler must also meet all relevant requirements for this type of communication equipment as imposed by law and/or responsible telecommunication organizations in the country of use. Never try to make a direct connection between the telephone network and the mixer amplifier.

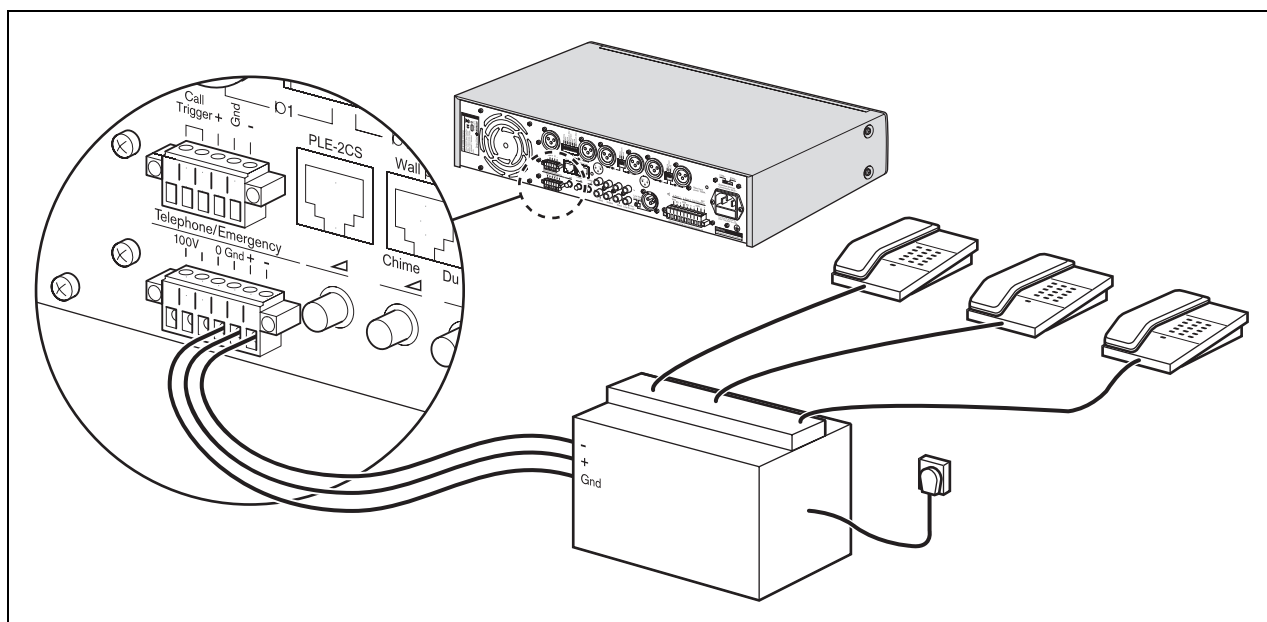


figure 4.7: Connecting emergency telephone lines

4.1.6 Music source inputs

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

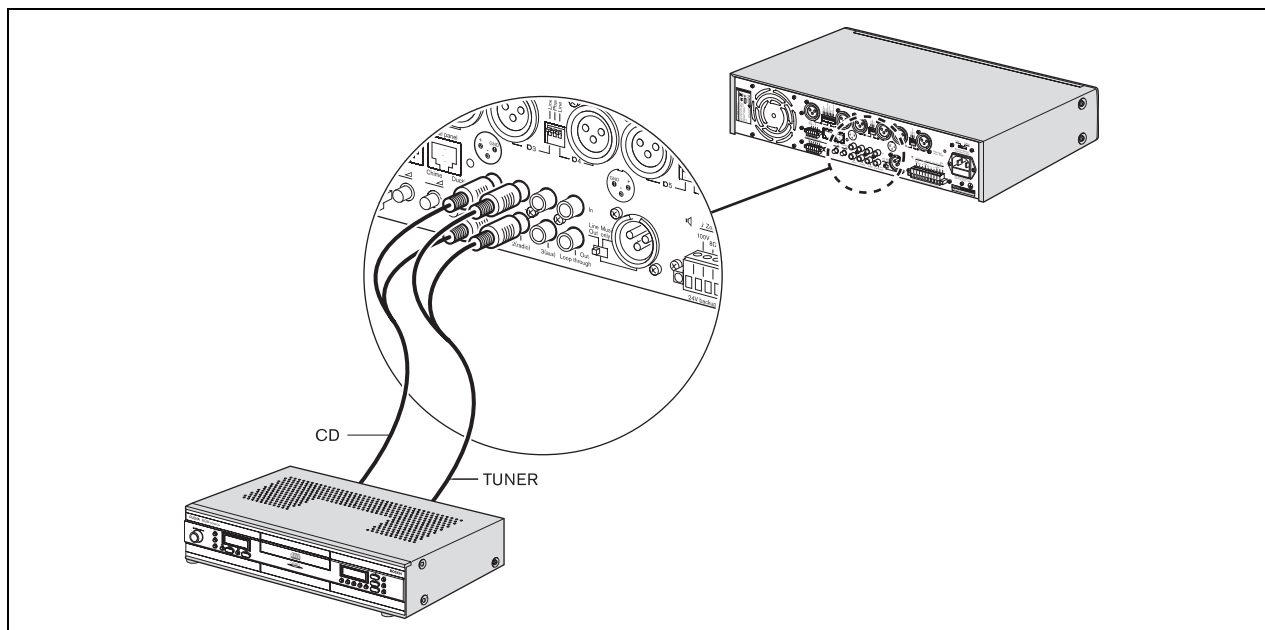


figure 4.8: Connecting music source inputs

4.2 Connecting outputs

4.2.1 Zone 1 and 2

Connect speakers to the 100 V or 8 Ohm terminal on the Euro style pluggable screw terminal connector (25) at the rear of the unit.

Also see section 4.2.5 “Connecting speakers”.

4.2.2 Call only

Connect speakers to the 100 V terminal on the Euro style pluggable screw terminal connector (25) at the rear of the unit.

Also see section 4.2.5 “Connecting speakers”.

4.2.3 Music only

Use the music master output connector (24) to provide a dedicated music out source for another device. For example, the music master output can be connected to a telephone coupler, so that callers can listen to music when they are put on hold (see figure 4.9).

To select the dedicated music out source, set the master switch for “line out or music only” (23) to “music only”. Only the music inputs (19, 20, and 21) will be audible. All other inputs, including the Tel. emergency/100V input will not be sent to this output.

To hear all mixed inputs (microphone/line, emergency, and music) set the master switch for “line out or music only” (23) to “line out”.

4.2.4 Line out/ loop through

Use the Pre-out, amp in insert (22) external sound processing equipment (e.g. an equalizer or Plena feedback suppressor) to be connected between the preamplifier and the power amplifier stages. See figure 4.9.

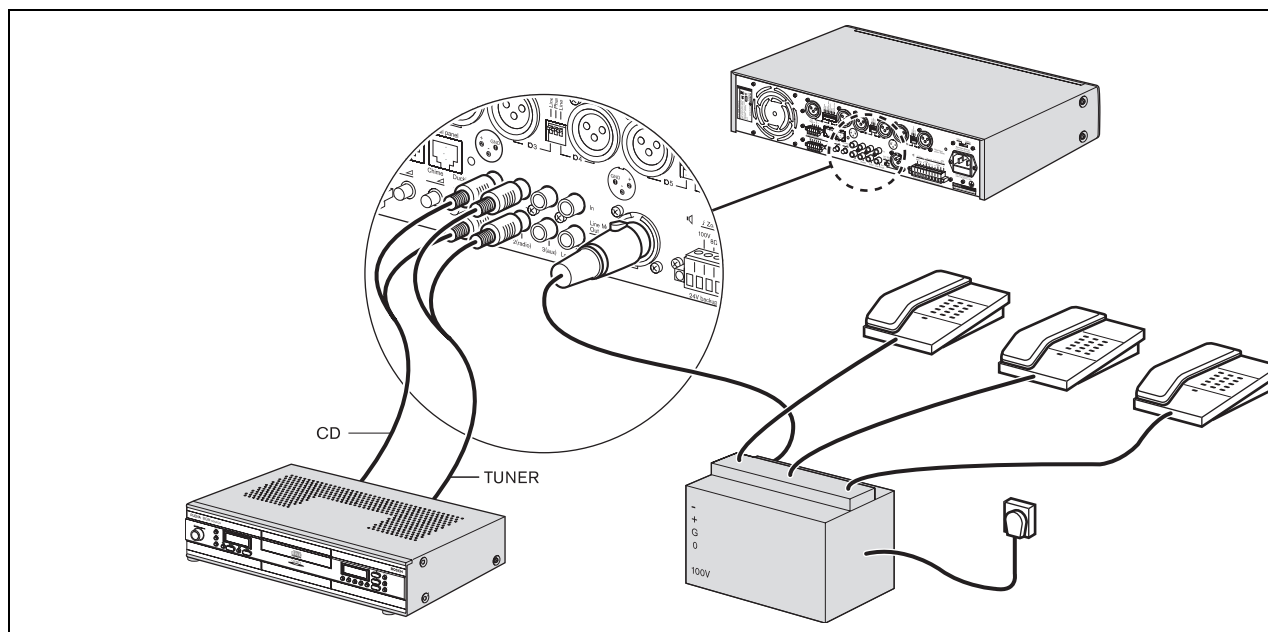


figure 4.9: Connecting music source inputs

4.2.5 Connecting speakers

4.2.5.1 Constant voltage loudspeakers

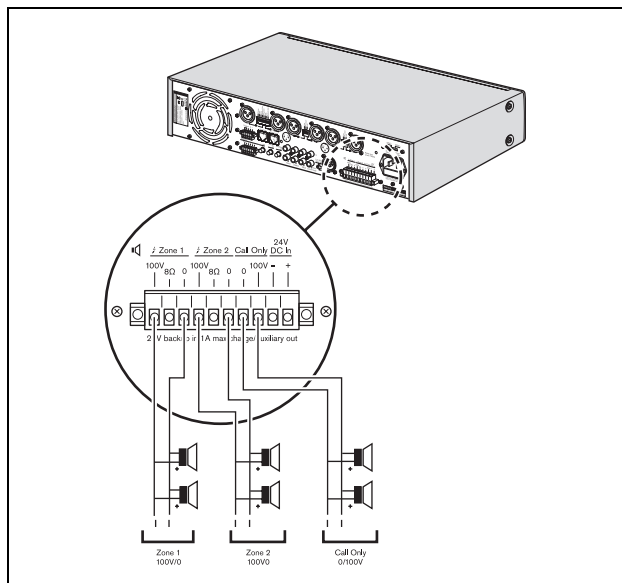


figure 4.10: Connecting speakers

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.

You can use the Call Only output for 3-wire remote volume control override. You can also use this output as an extra zone where announcements can be heard, but not music.

4.2.5.2 Low impedance loudspeakers

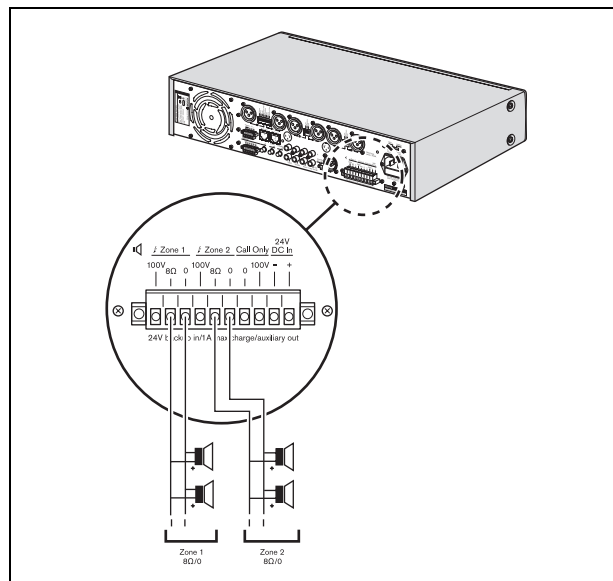


figure 4.11: Connecting speakers

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.

4.3 Unit settings

4.3.1 Rear panel settings

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

- DIP switches
- Rotary dials
- Master switch for line out or music only.

See the following tables for an overview of the settings and typical examples of their use.

table 4.1: DIP switch settings

DIP switch	On	Off	Typical example (On)
Chime (mic/line 1)	Chime will be sounded at the beginning of an announcement.	Chime will not be sounded at the beginning of an announcement.	Announcement of train departure time.
PTT "Push to talk" (mic/line 1 only)	This input is muted when the push to talk contact is open. When the push to talk contact is closed: <ul style="list-style-type: none"> • this input is available for speech. • a chime will sound, if selected. • the music and other mic/line inputs will be reduced in volume to the level set by the ducking level control knob. 	Push to talk off. The signal will be mixed with the other mic/line signals. Microphone 1 will mix with the background music or the other microphones in the selected zones.	Users can have private conversations during live broadcasts (for example, with an all call call-station, such as the PLE-1CS).
Line	Input signal from line.	Input signal from microphone.	Depends on set-up.
Speech filter	Enhances clarity of speech, by cutting-off the lower frequencies of the signal.	Speech filter inactive.	Use for announcements
Phantom power	Provides power to condenser microphones.	Phantom power unavailable.	Enable phantom power if you use electret or condenser microphones.
VOX (mic/line 2 only)	Temporarily suppresses the background music to an adjustable "ducking level" (see table 4.2) while you speak into the microphone. The VOX mode is normally used with hand-held microphones such as the LBC 2900/15. Background music and announcements will be heard in the selected zones. A chime is not available in this mode.	VOX inactive. Microphone 2 will mix with the background music or the other microphones in the selected zones.	Use to make casual announcements (such as announcing the winner of a competition) while temporarily suppressing the background music to an adjustable ducking level.

table 4.2: Rotary controls

Rotary control	Effect	Typical example
Ducking level control	Sets the required ducking level when VOX and/or push to talk is active (see table 4.1). When the ducking level is set to mute, the music volume will be fully attenuated; when the ducking level is set to mix, both music and speech inputs can be heard - music and speech will be mixed. When ducking the music input is ducked (attenuated), the microphone/line inputs are always muted when a call is made.	Set the ducking level control to mute if you want the announcement to be heard without background music.
Chime volume control	Alters the chime volume. The mid range is -8 dB (40 V), which should be sufficient for most applications. Test the chime by switching on microphone 1. Remove the microphone after testing if it is not further required.	Set the volume of the chime to a higher level when the system is being used in large open areas or when important announcements have to be made.
Telephone emergency/100V volume control	Attenuates the emergency announcement or signal. Control range from -25 dB to 0 dB. For safety reasons, the volume of the emergency announcement or signal cannot be fully set to zero.	Set the volume of the emergency announcement to a higher level when the system is being used in large open areas.

**Note**

When PTT or VOX are selected, the ducking control controls between 3 dB attenuation (very little ducking) to $-\infty$ dB (muted).

When ducking, the music is also present on the Call only output. If you do not want this, set the ducking control to mute.

When ducking, music in a non-selected zone is also affected.

table 4.3: Master switch for line out or music only

Slide switch setting	Effect	Typical example
Line out	All mixed inputs (microphone/line, emergency, and music) are available.	Various set-ups are possible.
Music only	A dedicated music out source is available for another external device. Only the music inputs (19, 20, and 21) are available. All other inputs, including the Tel. emergency/100V input will be overridden.	The "music master output" can be connected to a telephone system, so that callers can listen to music when they are put on hold.

4.3.2 Pin settings and labelling

Users can create custom labels for the: microphone/line inputs, description of the music sources, and audio output zones 1 and 2. These labels can be attached to the mixer amplifier at position numbers 2, 4, and 6 (see figure 2.2). Colored pins can also be inserted at various positions around the dial controls to indicate the favorite settings for a particular application.

The pins are engineered in such a way that they cannot be taken out by hand. This is to prevent tampering. 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 a knob.

If these settings have to be changed, use a pair of soft-tipped pliers to carefully remove the pins. If you do not have a pair of soft-tipped pliers, you can use ordinary pliers instead, but first place some plastic tape on the tips of the pliers to prevent damaging the front of the unit.

To remove the clear plastic covers in front of the labels:

- 1 Carefully insert a small screwdriver into the cut-out at the bottom of the plastic cover.
- 2 Gently lift the cover, and bend it in the middle. Take care not to force the cover or the front panel.

To reattach the plastic covers with paper labels:

- 1 Insert the paper label into the holder at the front of the unit.
- 2 Pick up the cover, and then bend it slightly in the middle by hand.
- 3 Fit the cover into the slot at the front of the unit, and then gently release the cover, making sure that the paper label stays in place.

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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 voltage selector at the rear of the unit.

- 1 Make sure the voltage selector (115V/ 230V) 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 Off - popped out (see figure 5.2).

5.1.2 Switch off

Set the power button (1) on the front of the unit to Off - popped out (see figure 5.2).

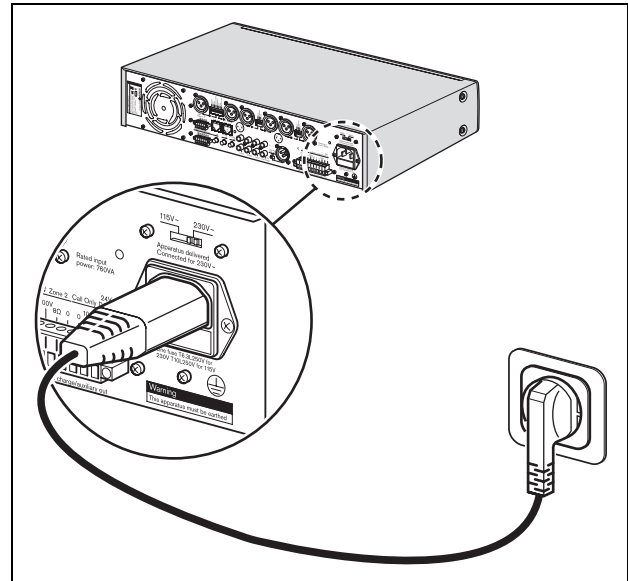


figure 5.1: Voltage selector

5.2 Microphone/line controls

Use the volume controls (9) to individually control the sound level of microphone/line inputs 1 through 6.

i Note

Users can create custom labels for the: microphone/line inputs, description of the music sources, and audio output zones 1 and 2. These labels can be attached to the mixer amplifier at position numbers 2, 4, and 6 (see figure 5.2). Colored pins can also be inserted at various positions around the dial controls to indicate the favorite settings for a particular application.

5.3 Music controls

5.3.1 Source selection

Use the music source selector (11) to select one of the connected music sources.

5.3.2 Volume control

Use the music source volume control (12) to control the sound level of the selected music source.

5.4 Tone control

5.4.1 Introduction

The unique tone controls provide separate control for mic/line inputs and music inputs so that the voice on the microphones can be specifically optimized for excellent speech or singing. Correspondingly, the tone controls for background music provide the most appropriate music reproduction.

The tone controls are not standard bass and treble controls: they can be used as a traditional tone control with high and low control, but also have a powerful contour that addresses problems found in real situations.

5.4.2 Microphone/line tone control

The tone control for the microphone and line inputs boosts warmth in voices without boosting rumble, and cuts rumble without losing warmth in the low frequencies. In the high frequencies, the tone control boosts sparkle without adding sharpness, but when cutting is first, cuts harshness and sharpness without reducing clarity.

Use the Hi (high) and Lo (low) tone controls (see figure 5.2, numbers 3 and 10) to collectively change the tone of microphone/line inputs 1 through 6.

5.4.3 Music tone control

The tone control for the music inputs boosts deep bass first without making the sound boomy, and cuts rumble without losing warmth in the low frequencies. In the high frequencies, the tone control is similar to the microphone inputs, with slightly different frequencies to suit music reproduction.

Use the Hi (high) and Lo (low) tone controls (see figure 5.2, numbers 5 and 13) to change the tone of the selected music source.

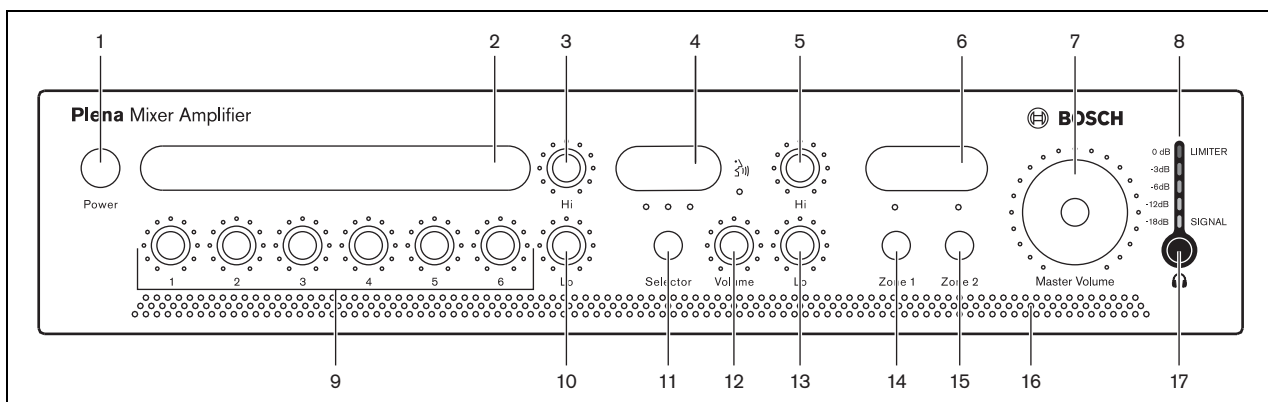


figure 5.2: Front panel

5.5 Output controls

5.5.1 Zone selection

Use the zone selection buttons (14 and 15) to route the music/microphone, line mix from the amplifier output to loudspeaker zone 1 and/or loudspeaker zone 2.

Announcements, however, are always routed to both zones, irrespective of the position of the zone selection buttons.

5.5.2 Master volume control

Use the master volume control dial (7) to collectively control the sound level of all outputs, except the emergency announcement/signal.

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6 Technical data

6.1 Electrical

6.1.1 Mains power supply

Voltage

115 - 230 VAC, $\pm 10\%$, 50/60 Hz

Inrush Current PLE-2MA120-EU

8/16 A (230/115 VAC)

Inrush Current PLE-2MA240-EU

9/19 A (230/115 VAC)

6.1.2 Battery power supply

Voltage

24 VDC, $\pm 15\%$

Current PLE-2MA120-EU

6 A

Current PLE-2MA240-EU

12 A

Charge current

0.5 ADC

Charge float voltage

27.4 VDC

6.1.3 Power consumption

PLE-2MA120-EU (mains)

400 VA

PLE-2MA240-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

Low Control

Max -12/+12 dB (frequency is level dependent)

Hi Control

Max -12/+12 dB (frequency is level dependent)

6.1.5 RJ-45 input 2 x

Call station input

For PLE-2CS(MM)

Wall panel input

For PLE-WP3S2Z

6.1.6 Mic/line input 6 x

Input 1 (Push-to-talk contact with ducking functionality)

5-pin Euro style, balanced, phantom

3-pin XLR, balanced, phantom

Input 2-6 (VOX with ducking functionality on input 2)

3-pin XLR, balanced, phantom

Sensitivity

1 mV (mic); 200 mV (line)

Impedance

>1 kohm (mic); >5 kohm (line)

S/N (flat at max volume)

63 dB

S/N (flat at min volume/muted)

>5 dB

Dynamic range

100 dB

S/N (flat at max volume)

>63 dB (mic); >70 dB (line)

S/N (flat at min volume/muted)

>75 dB

CMRR

>40 dB (50 Hz to 20 kHz)

Headroom

>25 dB

Speech filter

-3 dB @ 315 Hz, high-pass, 6 dB/oct

Phantom power supply

16 V via 1.2 kohm (mic)

Speech filter

-3 dB @ 315 Hz, high-pass,

6 dB/oct

VOX (input 1 & 2)

attack time 150 ms; release time 2 s

6.1.7 Music inputs 3x

Connector	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

6.1.8 Emergency / telephone 1 x

Connector	7-pin, Euro style pluggable screw terminal
Sensitivity tel	100 mV – 1 V adjustable
Sensitivity 100V	10 V – 100 V adjustable
Impedance	>10 kohm
S/N (flat at max volume)	>65 dB
VOX	threshold 50 mV; attack time 150 ms; release time 2 s

6.1.9 Loop through insert 1 x

Connector	Cinch
Nominal level	1 V
Impedance	>10 kohm

6.1.10 Master/music output 1 x

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

6.1.11 Loudspeaker outputs 100 V*

Connector	Screw, floating
Max / rated PLE-2MA120-EU	180 W / 120 W
Max / rated PLE-1906/10	360 W / 240 W

6.1.12 Loudspeaker output 8 ohm*

Connector	Euro style pluggable screw terminal, floating
PLE-2MA120-EU	31 V (120 W)
PLE-2MA240-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-2MA120-EU)	Approx. 10.5 kg
Weight (PLE-2MA240-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

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