



E-400, E-800, E-1200,
E-1500

power amplifier

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1 General information

This user manual contains important information on the safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to another user, be sure that they also receive this manual.

Our products and user manuals are subject to a process of continuous development. We therefore reserve the right to make changes without notice. Please refer to the latest version of the user manual which is ready for download under www.thomann.de.

1.1 Further information

On our website (www.thomann.de) you will find lots of further information and details on the following points:

Download	This manual is also available as PDF file for you to download.
Keyword search	Use the search function in the electronic version to find the topics of interest for you quickly.
Online guides	Our online guides provide detailed information on technical basics and terms.
Personal consultation	For personal consultation please contact our technical hotline.
Service	If you have any problems with the device the customer service will gladly assist you.

1.2 Notational conventions

This manual uses the following notational conventions:

Letterings

The letterings for connectors and controls are marked by square brackets and italics.

Examples: *[VOLUME]* control, *[Mono]* button.

1.3 Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this manual.

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
CAUTION!	This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.
Warning signs	Type of danger
	Warning – high-voltage.
	Warning – danger zone.

2 Safety instructions

Intended use

This device amplifies electric audio frequency signals to operate passive speakers. Use the device only as described in this user manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety



DANGER!

Danger for children

Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!

Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!

Never let children unattended use electrical devices.



DANGER!

Electric shock caused by high voltages inside

Within the device there are areas where high voltages may be present. Never remove any covers.

There are no user-serviceable parts inside.

Do not use the device if covers, protectors or optical components are missing or damaged.



DANGER!

Electric shock caused by short-circuit

Always use proper ready-made insulated mains cabling (power cord) with a protective contact plug. Do not modify the mains cable or the plug. Failure to do so could result in electric shock/death or fire. If in doubt, seek advice from a registered electrician.



CAUTION!

Possible hearing damage

With loudspeakers or headphones connected, the device can produce volume levels that may cause temporary or permanent hearing impairment.

Do not operate the device permanently at a high volume level. Decrease the volume level immediately if you experience ringing in your ears or hearing impairment.



NOTICE!

Risk of fire

Do not block areas of ventilation. Do not install the device near any direct heat source. Keep the device away from naked flames.



NOTICE!

Operating conditions

This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.



NOTICE!

Power supply

Before connecting the device, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly injure the user.

Unplug the device before electrical storms occur and when it is unused for long periods of time to reduce the risk of electric shock or fire.



NOTICE!

Magnetic fields

The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The strongest magnetic fields are directly above and below the power amplifier. Therefore, never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly above or below the power amplifier. When installing the power amplifier into a rack, you should place it in the lowest position, and further equipment such as pre-amplifiers in the highest position.



NOTICE!

Possible damage due to installation of a wrong fuse

The use of different types of fuses can cause serious damage to the unit. Fire hazard!

Only fuses of the same type may be used.

3 Features

- Low installation depth
- 2 × 190 W @ 4 Ω, 2 × 120 W @ 8 Ω, 1 × 380 W @ 8 Ω bridged (item no. 173888)
- 2 × 500 W @ 4 Ω, 2 × 350 W @ 8 Ω, 1 × 1000 W @ 8 Ω bridged (item no. 173889)
- 2 × 1200 W @ 4 Ω, 2 × 800 W @ 8 Ω, 1 × 2400 W @ 8 Ω bridged (item no. 460282)
- 2 × 1430 W @ 4 Ω, 2 × 950 W @ 8 Ω, 1 × 2860 W @ 8 Ω bridged (item no. 460283)
- Inputs: XLR, phone jack (balanced) and RCA (only for item no. 173888)
- Outputs: Speaker Twist and terminal clamps for speakers
- Protection circuits: DC, short circuit, over-temperature, limiter
- Defeatable standby function (only with item no. 173889 and item no. 173889)

4 Installation and starting up

Unpack and check carefully there is no transportation damage before using the unit. Keep the equipment packaging. To fully protect the product against vibration, dust and moisture during transportation or storage use the original packaging or your own packaging material suitable for transport or storage, respectively.

Create all connections while the device is off. Use the shortest possible high-quality cables for all connections. Take care when running the cables to prevent tripping hazards.



DANGER!

Electric shock caused by high voltages at the power amplifier output

The output voltages of modern high-performance amplifiers may result in death or serious injury.

Never touch the bare ends of loudspeaker cables when the amplifier is on.



NOTICE!

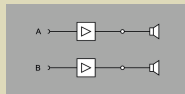
Magnetic fields

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Possible operation modes

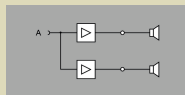
Depending on the individual application, the amplifier can be used in different operation modes:

Stereo mode



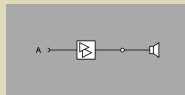
The two amplifier channels operate independently of one another, either channel (A and B) is amplified and connected to loudspeakers, the volume can be controlled separately for the two outputs.

Parallel mode



The two amplifier channels receive the same input signal from channel A and loudspeakers are connected to each amplifier, the volume is controlled via the control knob for channel A.

Bridged mode



The two amplifier channels are internally connected in such a way that twice the output power is available. Only the input signal from channel A is amplified and loudspeakers are connected only to the correspondingly marked output. The volume is controlled via the control knob for channel A.

For each output of the amplifier, the total impedance resulting from the loudspeakers connected to it must not be below the allowed minimal impedance of the amplifier output. If you connect more than one loudspeaker to an amplifier output, please note the following:

- If the loudspeakers are connected in a series, the individual impedances will be added up.
- If the loudspeakers are connected in parallel, the reciprocal of the total impedance equals the sum of the reciprocals of the individual impedances.

Example: If you have two loudspeakers with the same impedance, their impedance doubles if they are connected in a series, their impedance halves if they are connected in parallel.

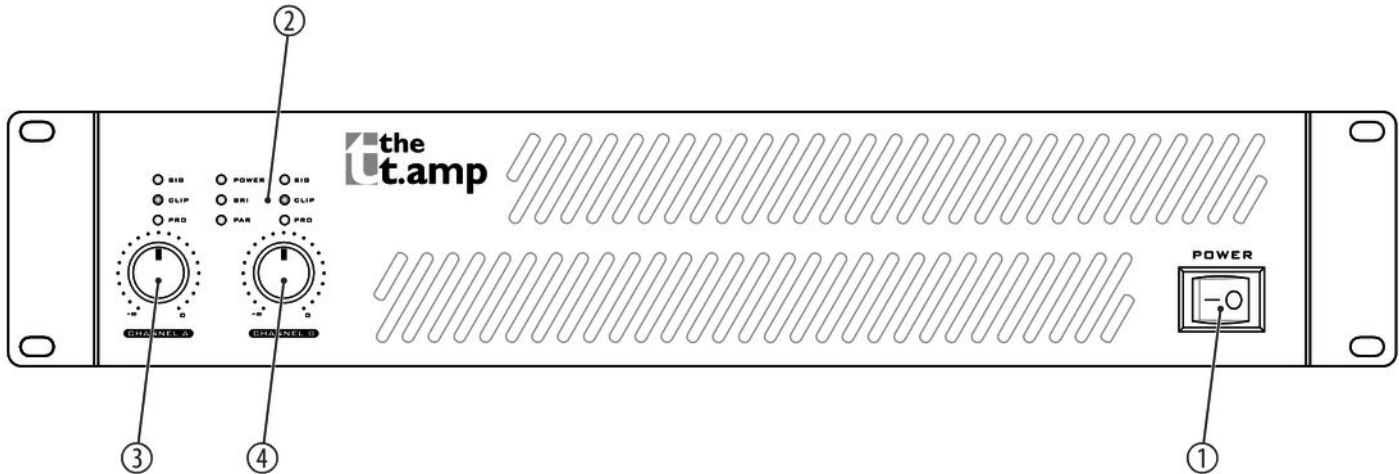
For detailed information related to this topic please refer to our Online Guide 'PA Speakers' (www.thomann.de).

Rack mounting

The device has been designed for rack mounting in a standard 19-inch rack; it occupies two rack units.

5 Connections and operating elements

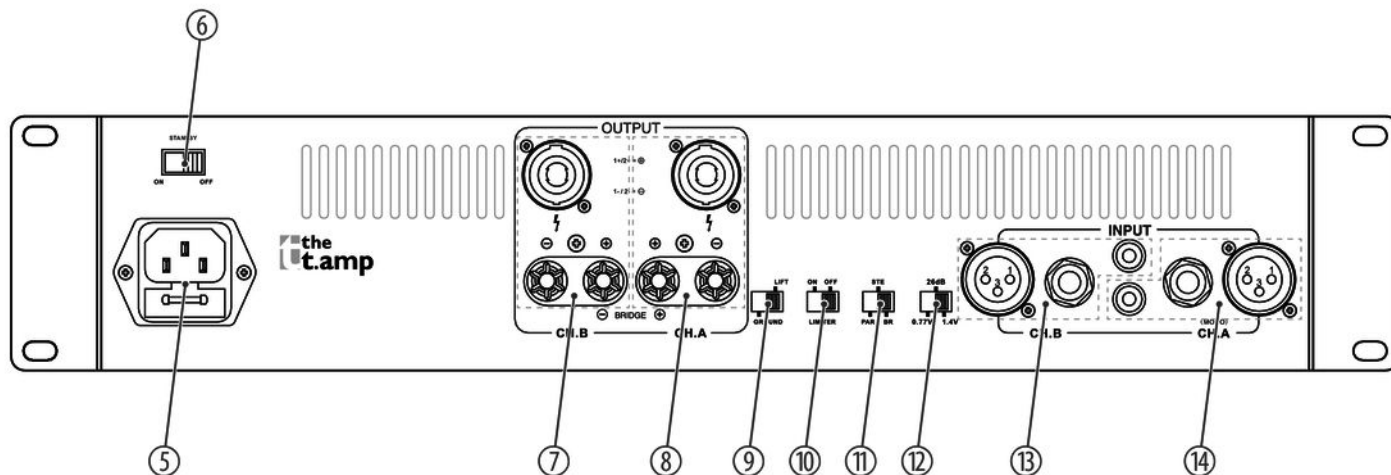
Front panel



1	[POWER]	Mains switch. Turns the device on and off.
2	LED panel	
	[SIG]	Indicates the presence of an input signal.
	[CLIP]	Lights under the following conditions: <ul style="list-style-type: none"> ■ Channel overload Reduce in this case the volume until the LED goes out. ■ Output short circuit Turn off the device immediately, correct the short circuit and turn on the device again.
	[PRO]	Lights under the following conditions: <ul style="list-style-type: none"> ■ Three to five seconds after switching on or off when the device is in an unstable condition. ■ The temperature of the amplifier blocks has reached 85°C. ■ One or more protection circuits have been triggered, or the device is faulty.
	[POWER]	Lights up green when the device is turned on. In standby mode, the LED lights red. As soon as the unit receives a signal, it switches back to normal mode and the LED will light up green again.

	<i>[PAR]</i>	Lights when the device is operated in parallel mode.
	<i>[BR]</i>	Lights when the device is operated in bridged mode.
3, 4	<i>[CHANNEL A],</i> <i>[CHANNEL B]</i>	Volume control for the respective channel

Rear panel E-400

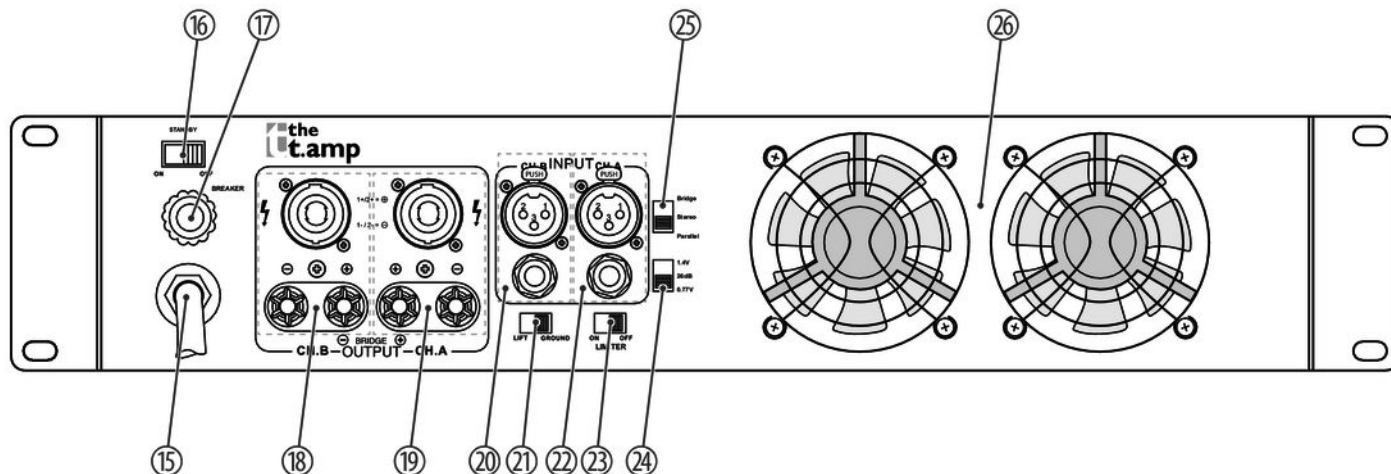


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5	IEC chassis plug with fuse holder
6	<i>[ON] [OFF] [STANDBY]</i> On / off switch for standby function. If the standby function is enabled, the device automatically switches to standby mode after fifteen minutes without any input signal.
7,8	<i>[OUTPUT]</i> Output channel B, A <ul style="list-style-type: none">■ Speaker Twist chassis connector for speaker output (1+, 2+: positive; 1-, 2-: negative)■ Screw terminals
9	<i>[GROUND] [LIFT]</i> Ground / lift switch. If hum is caused by a ground loop, you can use this switch to disconnect the connection between the earth pin of the device and the signal ground of the device.
10	<i>[LIMITER]</i> Limits the output level so that the maximum distortion is 5%.

11	<p>Selector switch for operating mode</p> <ul style="list-style-type: none"> ■ [PAR]: Parallel mode ■ [STE]: Stereo mode ■ [BR]: Bridged mode
12	<p>Selector switch for input sensitivity</p>
13, 14	<p>[INPUT]</p> <p>Input channel B, A</p> <ul style="list-style-type: none"> ■ XLR chassis socket ■ ¼-inch (6.35-mm) jack (balanced or unbalanced) ■ RCA socket

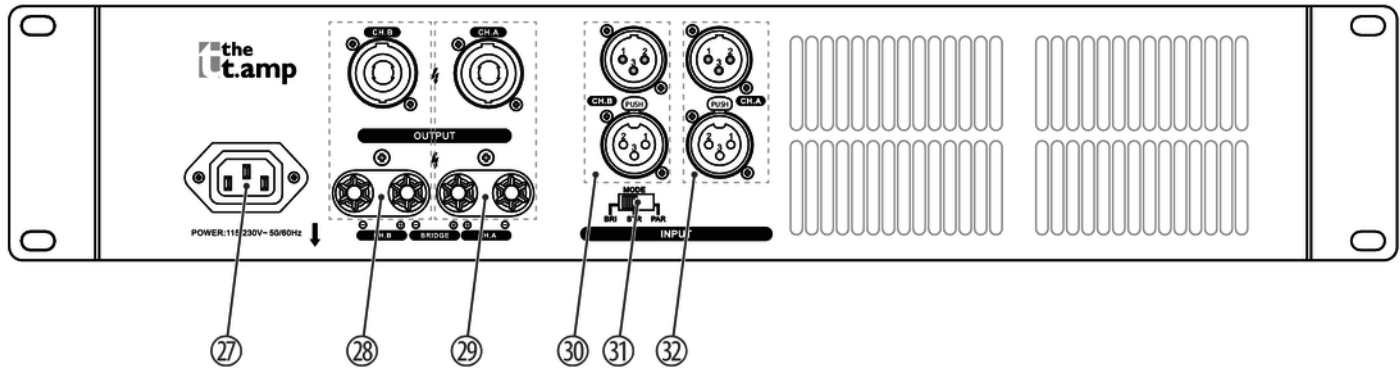
Rear panel E-800



15	Power cord
16	<p><i>[ON] [OFF] [STANDBY]</i></p> <p>On / off switch for standby function. If the standby function is enabled, the device automatically switches to standby mode after fifteen minutes without any input signal.</p>
17	<p><i>[BREAKER]</i></p> <p>Resettable fuse. The fuse switches off when the power consumption of the power amplifier is too high. Once the problem is resolved, the fuse is automatically reset and the device is ready for use again. The switch can be used to force the reset.</p>
18, 19	<p><i>[OUTPUT]</i></p> <p>Output channel B, A</p> <ul style="list-style-type: none"> ■ Speaker Twist chassis connector for speaker output (1+, 2+: positive; 1-, 2-: negative) ■ Screw terminals
20, 22	<p><i>[INPUT]</i></p> <p>Input channel B, A</p> <ul style="list-style-type: none"> ■ XLR chassis socket ■ ¼-inch (6.35-mm) jack (balanced or unbalanced)

21	<i>[GROUND]</i> <i>[LIFT]</i> Ground / lift switch. If hum is caused by a ground loop, you can use this switch to disconnect the connection between the earth pin of the device and the signal ground of the device.
23	<i>[LIMITER]</i> Limits the output level so that the maximum distortion is 5%.
24	Selector switch for input sensitivity
25	Selector switch for operating mode <ul style="list-style-type: none">■ <i>[Parallel]</i>: Parallel mode■ <i>[Stereo]</i>: Stereo mode■ <i>[Bridge]</i>: Bridged mode

Rear panel E-1200, E-1500



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27	IEC panel plug
28, 29	<p><i>[OUTPUT]</i></p> <p>Output channel B, A</p> <ul style="list-style-type: none">■ Speaker Twist chassis connector for speaker output (1+, 2+: positive; 1-, 2-: negative)■ Screw terminals
30, 32	<p><i>[INPUT]</i></p> <p>Input channel B, A</p> <ul style="list-style-type: none">■ XLR chassis socket (male)■ XLR chassis socket (female)
31	<p>Selector switch for operating mode</p> <ul style="list-style-type: none">■ <i>[PAR]</i>: Parallel mode■ <i>[STR]</i>: Stereo mode■ <i>[BRI]</i>: Bridged mode

6 Technical specifications

E-400, E-800

	E-400 (item no. 173888)	E-800 (item no. 173889)
Amp class	AB	H, 2 steps
Input connections	1 × IEC panel plug C14	2 × XLR socket, 3-pin
	2 × XLR socket, 3-pin	
	2 × 1/4" phone socket	2 × 1/4" phone socket
	2 × RCA socket	
Input impedance	20 kΩ (balanced)	20 kΩ (balanced)
	10 kΩ (unbalanced)	10 kΩ (unbalanced)
Output connections	2 × Speaker Twist panel connector	2 × Speaker Twist panel connector
	4 × terminal clamp	4 × terminal clamp
Output power	8 Ω, stereo: 2 × 120 W RMS	8 Ω, stereo: 2 × 350 W RMS

	E-400 (item no. 173888)	E-800 (item no. 173889)
	4 Ω, stereo: 2 × 190 W RMS	4 Ω, stereo: 2 × 500 W RMS
	8 Ω bridged, stereo: 1 × 380 W RMS (@ 1 kHz, THD ≤0.1 %)	8 Ω bridged, stereo: 1 × 1000 W RMS (@ 1 kHz, THD ≤0.1 %)
Frequency response	20 Hz ... 20 kHz (0 / -3 dB), ±1 dB	20 Hz ... 20 kHz (0 / -3 dB), ±1 dB
Signal-to-noise ratio	> 100 dB (A-weighted)	> 100 dB (A-weighted)
Total harmonic distortion (THD)	< 0.03 %, @ 50 % of maximum output power	< 0.03 %, @ 50 % of maximum output power
Sensitivity	0.77 V / 26 dB / ... 1.4 V	0.77 V / 26 dB / ... 1.4 V
Gain	34 dB (0.77 V), 28 dB (1.4 V)	36 dB (0.77 V), 31 dB (1.4 V)
Power consumption	Typical current draw depending on the output power level (RMS value A_{RMS}). All values based on a 230 V ~mains voltage and a 1 kHz input signal at 0 dB (sine).	
	2 × 190 W @ 4 Ω	2 × 500 W @ 4 Ω
	2 × 120 W @ 8 Ω	2 × 350 W @ 8 Ω

		E-400 (item no. 173888)	E-800 (item no. 173889)
		1 × 380 W @ 8 Ω bridged	1 × 1000 W @ 8 Ω bridged
Supply voltage		230 V ~ 50 Hz	230 V ~ 50 Hz
Fuse		5 mm × 8 mm, 8 A, 250 V, fast-acting	Resettable fuse 10 A
Dimensions (W × H × D)		482 mm × 88 mm × 317 mm	482 mm × 88 mm × 375 mm
Weight		8.6 kg	12.8 kg
Ambient conditions	Temperature range	0 °C...40 °C	
	Relative humidity	50 %, non-condensing	

E-1200, E-1500

		E-1200 (item no. 460282)	E-1500 (460283)
Amp class		H	H
Input connections		1 × IEC panel plug C14	1 × IEC panel plug C14

E-400, E-800, E-1200, E-1500

	E-1200 (item no. 460282)	E-1500 (460283)
	4 × XLR socket, 3-pin	4 × XLR socket, 3-pin
Input impedance	20 kΩ (balanced)	20 kΩ (balanced)
	10 kΩ (unbalanced)	10 kΩ (unbalanced)
Output connections	2 × Speaker Twist panel connector	2 × Speaker Twist panel connector
	4 × terminal clamp	4 × terminal clamp
Output power	8 Ω, stereo: 2 × 800 W RMS	8 Ω, stereo: 2 × 950 W RMS
	4 Ω, stereo: 2 × 1200 W RMS	4 Ω, stereo: 2 × 1430 W RMS
	8 Ω bridged, stereo: 1 × 2400 W RMS (@ 1 kHz, THD ≤ 0.1 %)	8 Ω bridged, stereo: 1 × 2860 W RMS (@ 1 kHz, THD ≤ 0.1 %)
Frequency response	20 Hz ... 20 kHz (1.7 / -0.8 dB), ±1 dB	20 Hz ... 20 kHz (1.7 / -0.8 dB), ±1 dB
Signal-to-noise ratio	≥ 100 dB	≥ 100 dB

		E-1200 (item no. 460282)	E-1500 (460283)
Total harmonic distortion (THD)		≤ 0.05 %, @ 50 % of maximum output power	≤ 0.05 %, @ 50 % of maximum output power
Gain		41 dB	41 dB
Power consumption		Typical current draw depending on the output power level (RMS value A_{RMS}). All values based on a 230 V ~mains voltage and a 1 kHz input signal at 0 dB (sine).	
		2 × 1200 W @ 4 Ω	2 × 1430 W @ 4 Ω
		2 × 800 W @ 8 Ω	2 × 950 W @ 8 Ω
		1 × 2400 W @ 8 Ω bridged	1 × 2860 W @ 8 Ω bridged
Supply voltage		115/230 V ~ 50/60 Hz	115/230 V ~ 50/60 Hz
Dimensions (W × H × D)		482 mm × 88 mm × 362 mm	482 mm × 88 mm × 362 mm
Weight		15.3 kg	16.0 kg
Ambient conditions	Temperature range	0 °C...40 °C	
	Relative humidity	50 %, non-condensing	

7 Plug and connection assignment

Introduction

This chapter will help you select the right cables and plugs to connect your valuable equipment in such a way that a perfect sound experience is ensured.

Please note these advices, because especially in 'Sound & Light' caution is indicated: Even if a plug fits into the socket, an incorrect connection may result in a destroyed power amp, a short circuit or 'just' in poor transmission quality!

Balanced and unbalanced transmission

Unbalanced transmission is mainly used in semi-professional environment and in hifi use. Instrument cables with two conductors (one core plus shielding) are typical representatives of the unbalanced transmission. One conductor is ground and shielding while the signal is transmitted through the core.

Unbalanced transmission is susceptible to electromagnetic interference, especially at low levels, such as microphone signals and when using long cables.

In a professional environment, therefore, the balanced transmission is preferred, because this enables an undisturbed transmission of signals over long distances. In addition to the conductors 'Ground' and 'Signal', in a balanced transmission a second core is added. This also transfers the signal, but phase-shifted by 180°.

Since the interference affects both cores equally, by subtracting the phase-shifted signals, the interfering signal is completely neutralized. The result is a pure signal without any noise interference.

1/4" TS phone plug (mono, unbalanced)



1	Signal
2	Ground, shielding

1/4" TRS phone plug (mono, balanced)



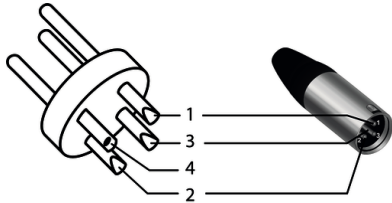
1	Signal (in phase, +)
2	Signal (out of phase, -)
3	Ground

1/4" TRS phone plug (stereo, unbalanced)



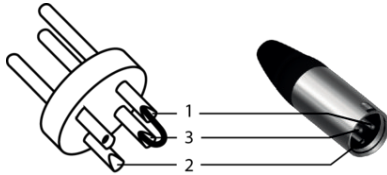
1	Signal (left)
2	Signal (right)
3	Ground

XLR plug (balanced)



1	Ground, shielding
2	Signal (in phase, +)
3	Signal (out of phase, -)
4	Shielding on plug housing (option)

XLR plug (unbalanced)



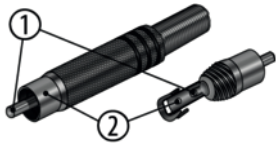
1	Ground, shielding
2	Signal
3	Bridged to pin 1

Speaker Twist chassis connector



1, +	Signal 1 (in phase)
1, -	Signal 1 (out of phase)
2, +	Signal 2 (in phase)
2, -	Signal 2 (out of phase)

RCA connection



Drawing and table indicate the pin assignment of an RCA plug.

1	Signal
2	Ground, shielding

8 Cleaning

Fan grids

The fan grids of the device must be cleaned of any contamination, such as dust, etc. on a regular basis. Before cleaning, switch off the device and disconnect mains-operated devices from the mains. Only use pH-neutral, solvent-free and non-abrasive cleaning agents. Clean the unit with a slightly damp lint-free cloth.

9 Protecting the environment

Disposal of the packaging material



For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

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