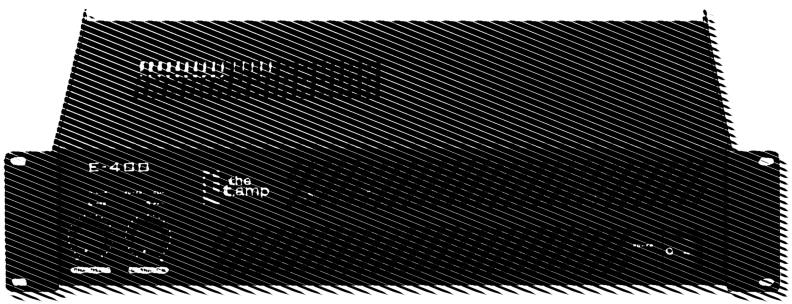
the t.amp

E-400

power amplifier



th•mann
MUSIC IS OUR PASSION

user manual

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1 General notes

This user manual contains important information on 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, include the manual for the next owner.

Our products are subject to a process of continuous development. We therefore reserve the right to make changes without notice.

Symbols and signal words

This section provides an overview of the symbols and signal words used in this user 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 notes

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.

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 cover the device nor any ventilation slots. Do not place 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.

3 Features

- Small mounting depth of only 308 mm
- 2 × 190 W at 4 Ω, 2 × 120 W at 8 Ω
- Inputs: XLR, (balanced) phone jack and RCA
- Outputs: NL4 (Speakon) and binding-post connectors for speakers
- Protective circuits: DC, short-circuit, overtemperature, limiter
- Automatic standby (can be disabled)

4 Installation and operation

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

Establish all connections as long as the unit is switched off. Use the shortest possible high-quality cables for all connections.

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.

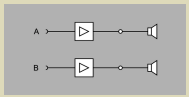
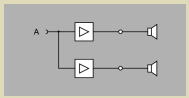
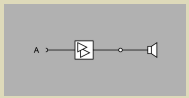
NOTICE!

Magnetic fields

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.

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 controls

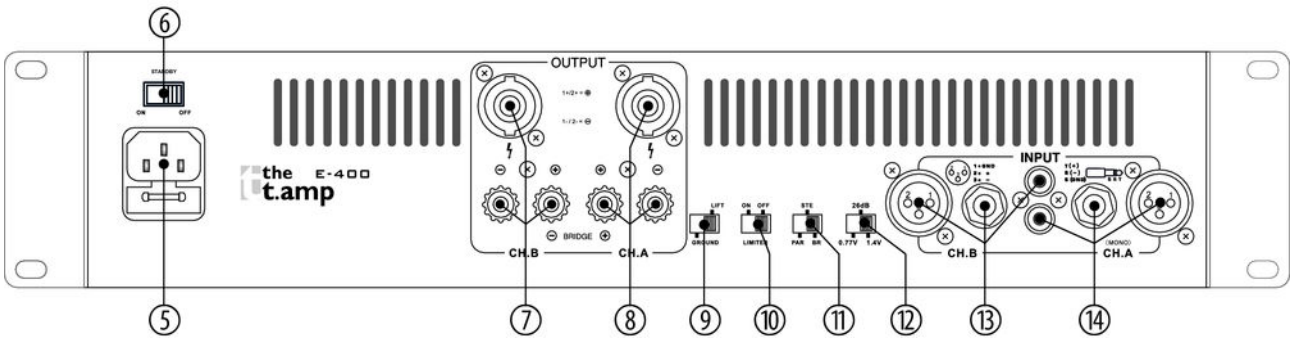
Front panel

1	POWER Power on/off switch. Switches the device on and off.
2	LED panel

	SIG	Indicates the presence of an input signal.
	CLIP	Lights under the following conditions: ■ Channel overdrive. In this case, reduce the volume until the LED turns off. ■ Short-circuit at the output. Immediately turn off the device, fix the short-circuit and turn on the device again.
	PRO	Lights under the following conditions: ■ Three to five seconds after turning on or off when the device is in an unstable state. ■ The temperature of the amplifier blocks has reached 85°C. ■ One or more protection circuits have been triggered or the device is defective.
	POWER	Lights up green when the unit is turned on. In standby mode, the LED lights red. When the unit receives a signal again, it switches back to normal mode and the LED lights green again.
	PAR	Lights when the device is operated in parallel mode.

	BR	Lights when the device is operated in bridged mode.
3, 4	CHANNEL A, CHANNEL B	Volume control for the respective channels.

Rear panel



5	Plug for mains cable and fuse holder
6	**ERP ON | OFF** This switch enables/disables the standby feature. If enabled, the unit automatically enters the standby mode when no input signal is present for at least fifteen minutes.

7,8	OUTPUT Output channel B, A ■ speakON panel connector as loudspeaker output (1+, 2+:positive; 1–, 2–: negative) ■ Screw terminals
9	Ground/Lift switch If there are hums due to a ground loop, you can use this switch to disconnect the protective earth connector from the signal ground of the device.
10	LIMIT Limits the output level such that maximum distortion is 5 %.
11	Selector switch for operating mode ■ PAR: Parallel mode ■ STR: Stereo mode ■ BR: Bridged mode

12	Selector switch for input sensitivity
13, 14	INPUT Input channel B, A ■ Female XLR panel connector ■ ¼-inch (6.35-mm) jack (balanced or unbalanced) ■ RCA jack

6 Technical data

Power output (RMS)	Stereo, 8 Ω: 2 × 120 W
	Stereo, 4 Ω: 2 × 190 W
Frequency response, –1 dB	20 Hz…20 kHz
Input sensitivity	0.77 V / 26 dB / 1.4 V
Voltage amplification	34dB (0.77V), 28dB (1.4V)
Class	AB
Signal-to-noise ratio	> 100 dB (A-gewichtet)
Total harmonic distortion, 50 % of maximum power output	< 0.03 %
Inputs	Female XLR panel connectors, ¼-inch (6.35-mm) jacks, RCA jacks
Input impedance	20 kΩ (balanced), 10 kΩ (unbalanced)
Outputs	speakON panel connector, screw terminals

Mains power supply	230 V ~ 50 Hz
Power consumption	1100 W
Dimensions (W × D × H)	482 mm × 317 mm × 88 mm
Weight	8.3 kg

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

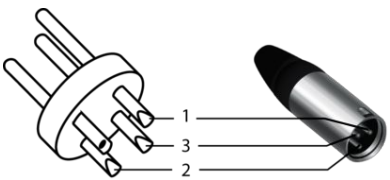
1/4" TRS phone plug (mono, balanced)

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

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

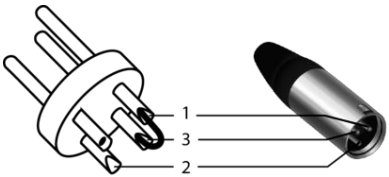
1	Signal (left)
2	Signal (right)
3	Ground

XLR plug (balanced)



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

XLR plug (unbalanced)



1	Ground, shielding
2	Signal
3	Bridged to pin 1

NL4 mounting connectors

1, +	Signal 1 (in phase)
1, –	Signal 1 (180 degree phase shift)
2, +	Signal 2 (in phase)
2, –	Signal 2 (180 degree phase shift)

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 on a regular basis to remove dust and dirt. Before cleaning, switch off the device and disconnect AC-powered devices from the mains. Use a lint-free damp cloth for cleaning. Never use solvents or alcohol for cleaning.

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). 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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