the t.amp

E4-130, E4-250

User Manual

Power Amplifier

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1 General information

This document contains important instructions for the safe operation of the product. Read and follow the safety instructions and all other instructions. Keep the document for future reference. Make sure that it is available to all those using the product. If you sell the product to another user, be sure that they also receive this document.

Our products and documentation are subject to a process of continuous development. They are therefore subject to change. Please refer to the latest version of the documentation, which is ready for download under *www.thomann.de*.

1.1 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 document.

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.
WARNING!	This combination of symbol and signal word indicates a possible dangerous situation that can result in death or serious 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!

Risk of injury and choking hazard for children!

Children can suffocate on packaging material and small parts. Children can injure themselves when handling the device. Never allow children to play with the packaging material and the device. Always store packaging material out of the reach of babies and small children. Always dispose of packaging material properly when it is not in use. Never allow children to use the device without supervision. Keep small parts away from children and make sure that the device does not shed any small parts (such knobs) that children could play with.

DANGER!

Danger to life due to electric current!

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 when covers, safety equipment or optical components are missing or damaged.

DANGER!

Danger to life due to electric current!

A short circuit could lead to a fire hazard and risk of death. Always use proper ready-made insulated triple-core mains cable with a safety plug. Do not modify the mains cable or the plug. In case of isolation damage, disconnect immediately the power supply and arrange repair. If in doubt, seek advice from a qualified electrician.

WARNING!

Possible hearing damage due to high volumes on speakers or headphones!

With speakers or headphones connected, the device can produce volume levels that may cause temporary or permanent hearing impairment. Over an extended period of time, even levels that seem to be uncritical can cause hearing damage. 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 due to covered vents and neighbouring heat sources!

If the vents of the device are covered or the device is operated in the immediate vicinity of other heat sources, the device can overheat and burst into flames. Never cover the device or the vents. Do not install the device in the immediate vicinity of other heat sources. Never operate the device in the immediate vicinity of naked flames.

NOTICE!

Damage to the device if operated in unsuitable ambient conditions!

The device can be damaged if it is operated in unsuitable ambient conditions. Only operate the device indoors within the ambient conditions specified in the “Technical specifications” chapter of this user manual. Avoid operating it in environments with direct sunlight, heavy dirt and strong vibrations. Avoid operating it in environments with strong temperature fluctuations. If temperature fluctuations cannot be avoided (for example after transport in low outside temperatures), do not switch on the device immediately. Never subject the device to liquids or moisture. Never move the device to another location while it is in operation. In environments with increased dirt levels (for example due to dust, smoke, nicotine or mist): Have the device cleaned by qualified specialists at regular intervals to prevent damage due to overheating and other malfunctions.

NOTICE!

Damage to the device due to high voltages!

The device can be damaged if it is operated with the incorrect voltage or if high voltage peaks occur. In the worst case, excess voltages can also cause a risk of injury and fires. Make sure that the voltage specification on the device matches the local power grid before plugging in the device. Only operate the device from professionally installed mains sockets that are protected by a residual current circuit breaker (FI). Ensure that the power cord plug is easily accessible at all times if it is the only device to safely disconnect the device from the mains supply. As a precaution, disconnect the device from the power grid when storms are approaching or it the device will not be used for a longer period.

NOTICE!

Interference with nearby electrical devices due to magnetic fields!

The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The magnetic fields are strongest directly above and below the Power Amplifier. You should therefore never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly above or below the Power Amplifier. When placing the Power Amplifier in a rack, you should place it at the bottom thereof, and place any other equipment at the top of the rack.

NOTICE!

Risk of fire due to installation of a wrong fuse!

Using fuses of a different type than compatible with the device may cause a fire and seriously damage the device. Only use fuses of the same type. Observe the labelling on the device casing and the information in the "Technical data" chapter.

NOTICE!

Possible staining due to plasticiser in rubber feet!

The plasticiser in the rubber feet of this product may react with the coating of the floor, resulting in permanent dark stains after a while. If necessary, use a suitable mat or felt pads to prevent direct contact between the product's rubber feet and the floor.

3 Features

- Low mounting depth of only 408 mm
- Output power
  - the t.amp E4-130 (item no. 348232):
    4 × 130 W @ 8 Ω, 4 × 200 W @ 4 Ω
  - the t.amp E4-250 (item no. 348233):
    4 × 400 W @ 4 Ω, 4 × 250 W @ 8 Ω
- Inputs: XLR
- Outputs: NL4 (speakON) connectors for speakers
- Protection circuits: DC, short circuit, overtemperature, limiter, soft start
- Defeatable standby function

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!

Risk of death from electrical current!

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!

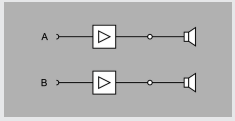
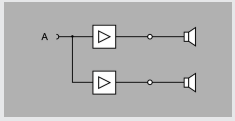
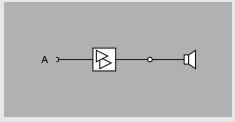
Interference with nearby electrical devices due to magnetic fields!

The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The magnetic fields are strongest directly above and below the Power Amplifier.

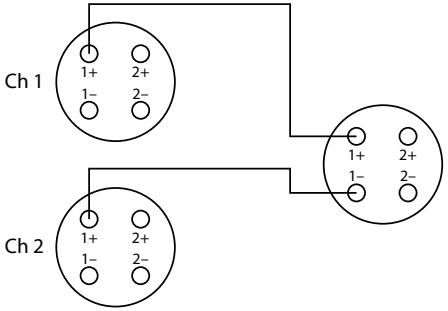
You should therefore never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly above or below the Power Amplifier. When placing the Power Amplifier in a rack, you should place it at the bottom thereof, and place any other equipment at the top of the rack.

Available operating modes

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

Stereo mode	
	All power amplifier channels operate independently of each other, each input is amplified by one channel, speakers are connected to all power amplifier channels, the volume for all outputs can be controlled separately.
Parallel mode	
	All power amplifier channels amplify the signal from input 1 or 3, speakers are connected to all power amplifier channels, the volume controls of channels 1 to 4 are used to control the volume.
Bridged mode	
	All power amplifier channels are internally wired to provide double the output power. Only the signal from input 1 or 3 is amplified, speakers are only connected to the accordingly labelled output. The volume is adjusted via controls 1 and 2 for channel 1, and via controls 3 and 4 for channel 3. The phase of the second or fourth channel is reversed. The speaker must be operated using a Y-adapter cable to CH1 1+ to 1+ and CH2 1+ to 1, see figure below.

Speaker connection in bridged mode



Total impedance

On each output of the amplifier, the overall impedance resulting from the individual impedances of the connected speakers must not fall below the minimum allowable impedance of the amplifier's output. If you want to connect multiple speakers to one amplifier output, note the following:

- When speakers are connected in series, the impedances add up.
- When speakers are connected in parallel, the reciprocal value of the total impedance is equal to the sum of the reciprocal values of the individual impedances.

For the example of two speakers with the same impedance, this means: In series connection, impedance is doubled. In parallel connection, it's halved.

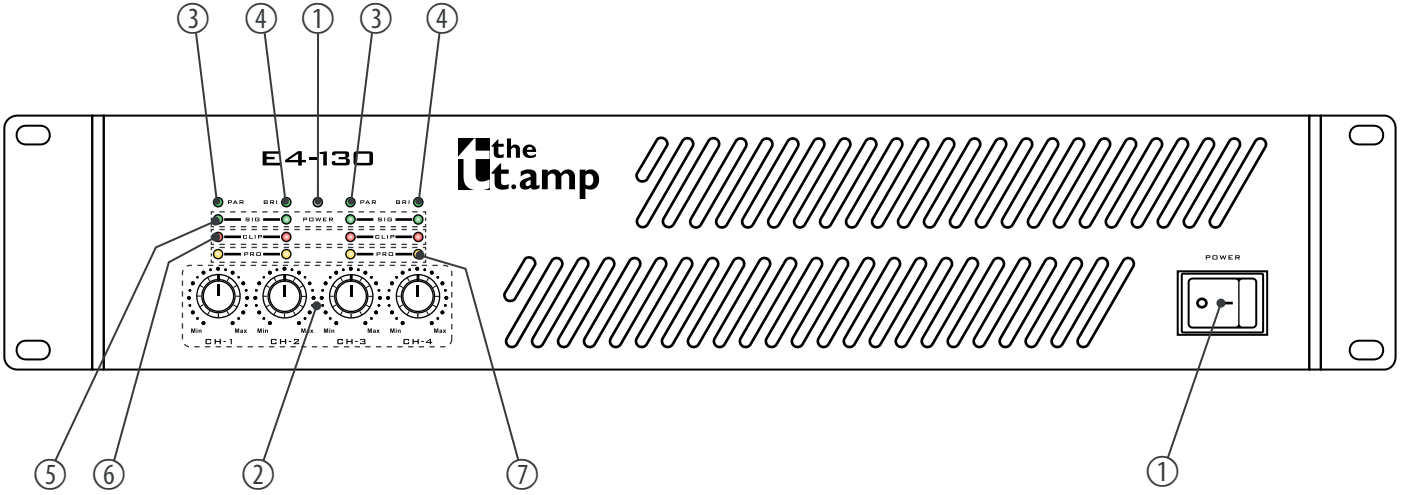
Detailed information on this topic can be found in our online guide “Speakers” (*www.thomann.de*).

Rack mounting

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

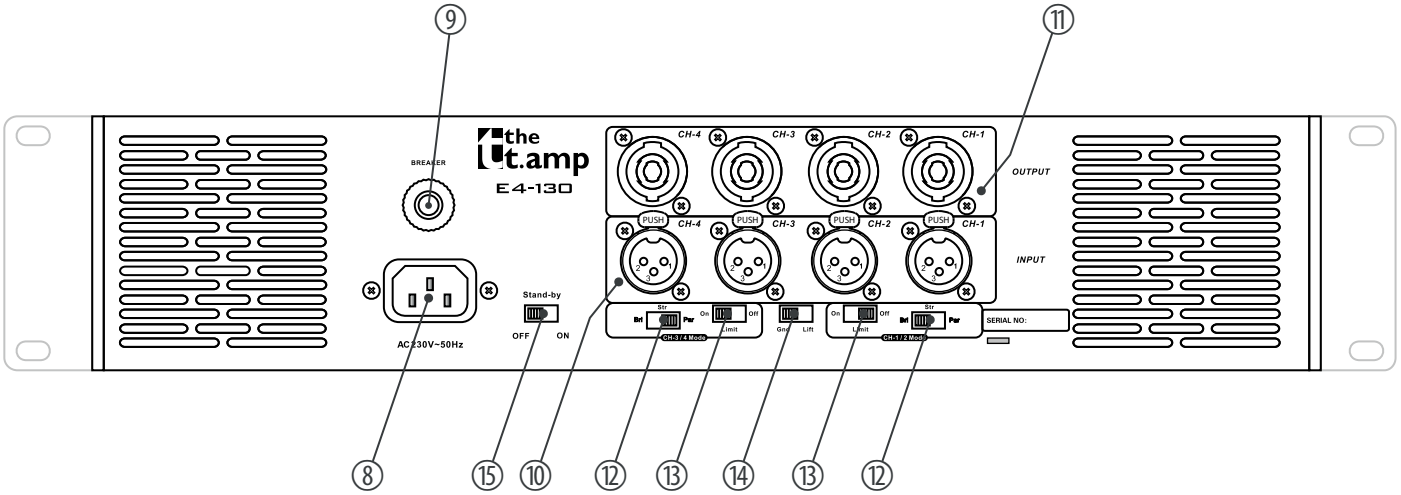
5 Connections and operating elements

Front panel



1	*[POWER]* | Mains switch Turns the device on and off. The corresponding LED 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.
2	*[CH-1]*, *[CH-2]*, *[CH-3]*, *[CH-4]* | Volume control for the respective channel
3	*[PAR]* | Lights up when the respective channel pair is operated in Parallel mode.
4	*[BRI]* | Lights up when the respective channel pair is operated in Bridged mode.
5	*[SIG]* | Indicates the presence of an input signal.
6	*[CLIP]* | Lights under the following conditions: ■ 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.
7	*[PRO]* | Lights under the following conditions: ■ Three to five seconds after switching on or off when the device is in an unstable condition. ■ No speaker connected. ■ The temperature of the power amp blocks has reached 85 °C. ■ One or more protection circuits have been triggered, or the device is faulty.

Rear panel



8	IEC chassis connector for the power supply of the device.
9	*[BREAKER]* | Resettable electronic fuse. If the fuse is triggered, fix the cause and then push the button to reset the fuse.
10	*[INPUT]* | XLR chassis sockets as inputs for channels 1 to 4

11	*[OUTPUT]* | Speaker Twist chassis connectors for speaker outputs (1+, 2+: positive; 1, 2–: negative) for channels 1 to 4
12	Selector switch for the operating mode of the respective channel pair ■ Par: Parallel mode ■ Str: Stereo mode ■ Bri: Bridged mode
13	*[LIMIT]* | Limits the output level so that the distortion is at most 5%.
14	*[Gnd / Lift]* | 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.
15	*[Stand-by ON | OFF]* | On / off switch for standby function. If the standby function is enabled, the device automatically switches to standby mode after thirty minutes without any input signal.

6 Technical specifications

E4-130 (item no. 348232)

Amplifier class	AB	
Input impedance	20 kΩ (balanced) 10 kΩ (unbalanced)	
Output power	8 Ω, stereo	4 × 130 W RMS
	4 Ω, stereo	4 × 200 W RMS
	8 Ω, bridged	2 × 400 W RMS
Frequency response	20 Hz…20 kHz, ±0.5 dB	
Signal-to-noise ratio	≥ 94 dB	
Total harmonic distortion (THD)	≤ 0.05%	
Crosstalk (at rated power @ 8 Ω, 1 kHz)	> 64 dB	
Damping factor (at rated power @ 8 Ω, 1 kHz)	> 150	
Slew rate	15 V / µs	
Sensitivity	1,000 mV	
Gain	–55 dB … 30 dB	

Attack	40 ms	
Power consumption	1,500 W	
Inrush current	17 A, 400 µs	
Supply voltage	230 V ~ 50 Hz	
Fuse	DC: 5 mm × 20 mm, 1.6 A, 250 V, slow blow DC: 5 mm × 20 mm, 8 A, 250 V, slow blow AC: RFMB-083-11D3N-B-A （ 88 series, 8 A, 250 V ）	
Dimensions (W × H × D)	482 mm × 88 mm × 408 mm	
Weight	12.9 kg	
Ambient conditions	Temperature range	0 °C…40 °C
	Relative humidity	20%…80% (non-condensing)

E4-250 (item no. 348233)

Amplifier class	AB	
Input impedance	20 kΩ (balanced) 10 kΩ (unbalanced)	
Output power	8 Ω, stereo	4 × 250 W RMS
	4 Ω, stereo	4 × 400 W RMS
	8 Ω, bridged	2 × 800 W RMS
Frequency response	20 Hz…20 kHz, ±0.5 dB	
Signal-to-noise ratio	≥ 94 dB	
Total harmonic distortion (THD)	≤ 0.05%	
Crosstalk (at rated power @ 8 Ω, 1 kHz)	> 64 dB	
Damping factor (at rated power @ 8 Ω, 1 kHz)	> 150	
Slew rate	15 V / µs	
Sensitivity	1,000 mV	
Gain	–52 dB … 33 dB	
Attack	40 ms	
Power consumption	2,700 W	

Inrush current	18 A, 500 µs	
Supply voltage	230 V ~ 50 Hz	
Fuse	DC: 5 mm × 20 mm, 1.6 A, 250 V, slow blow DC: 5 mm × 20 mm, 12 A, 250 V, slow blow AC: RFMB-153-11D3N-B-A （ 88 series, 15 A, 250 V ）	
Dimensions (W × H × D)	482 mm × 88 mm × 408 mm	
Weight	15.0 kg	
Ambient conditions	Temperature range	0 °C…40 °C
	Relative humidity	20%…80% (non-condensing)

Further information

Channels	4
19-inch installation height	2 RU
2 Ω stable	No
DSP / crossover	No
Convection cooling	No

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

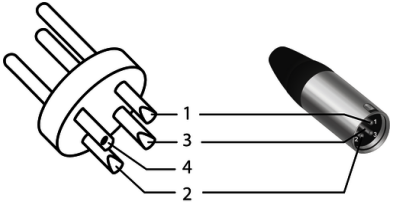
Unbalanced transmission is mainly used in semi-professional environment and in hifi use. Instrument cables with two conductors (one core plus shielding) are typical representatives of the unbalanced transmission. One conductor is ground and shielding while the signal is transmitted through the core.

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°.

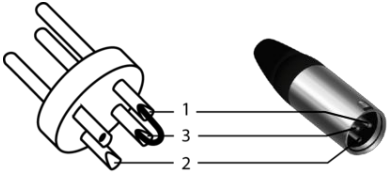
Since the interference affects both cores equally, by subtracting the phase-shifted signals, the interfering signal is completely neutralized. The result is a pure signal without any noise interference.

XLR plug (balanced)



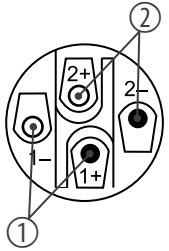
1	Ground, shielding
2	Signal (in phase, +)
3	Signal (out of phase, –)
4	Shielding on plug housing (option)

XLR plug (unbalanced)



1	Ground, shielding
2	Signal
3	Bridged to pin 1

Speaker Twist connector



1, +	Signal 1 (in phase)
1, –	Signal 1 (out of phase)
2, +	NC (not connected)
2, –	NC (not connected)

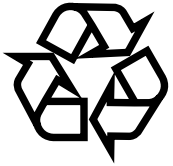
8 Cleaning

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.

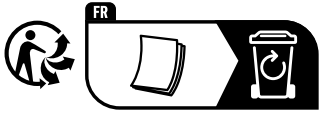
9 Protecting the environment

Disposal of the packing material



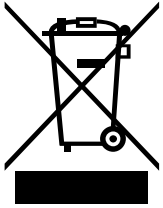
Environmentally friendly materials have been chosen for the packaging. These materials can be sent for normal recycling. Ensure that plastic bags, packaging, etc. are disposed of in the proper manner.

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



Observe the disposal note regarding documentation in France.

Disposal of your old device



This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) as amended.

Do not dispose of your old device with your normal household waste; instead, deliver it for controlled disposal by an approved waste disposal firm or through your local waste facility. If in doubt, consult your local waste management facility. You can also return the device to a retailer if they offer to take the device back for free or if they are legally obliged to do so. When disposing of the device, comply with the rules and regulations that apply in your country. You can also return your old device to Thomann GmbH at no charge. Check the current conditions on *www.thomann.de*.

Proper disposal protects the environment as well as the health of your fellow human beings. This is because the proper handling of old devices negates the potential negative effects of hazardous substances, and because it conserves resources by recycling them.

Also note that waste avoidance is a valuable contribution to environmental protection. Repairing a device or passing it on to another user is an ecologically valuable alternative to disposal. For example, use the classified ads of Thomann GmbH.

If your old device contains personal data, delete those data before disposing of it.