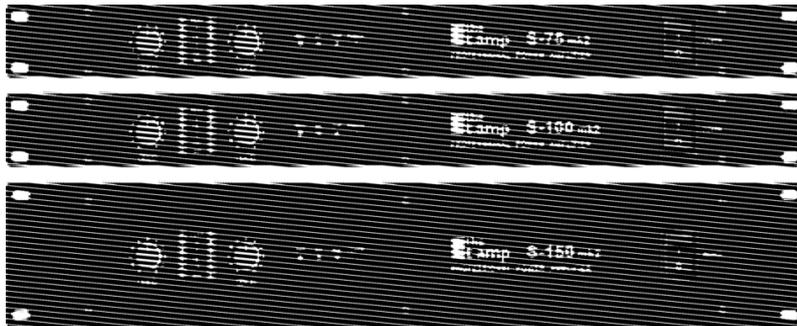




S-75 • S-100 • S-150  
power amplifier



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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
<b>DANGER!</b>	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.
<b>CAUTION!</b>	This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided.
<b>NOTICE!</b>	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 signs	Type of danger
	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.



**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**

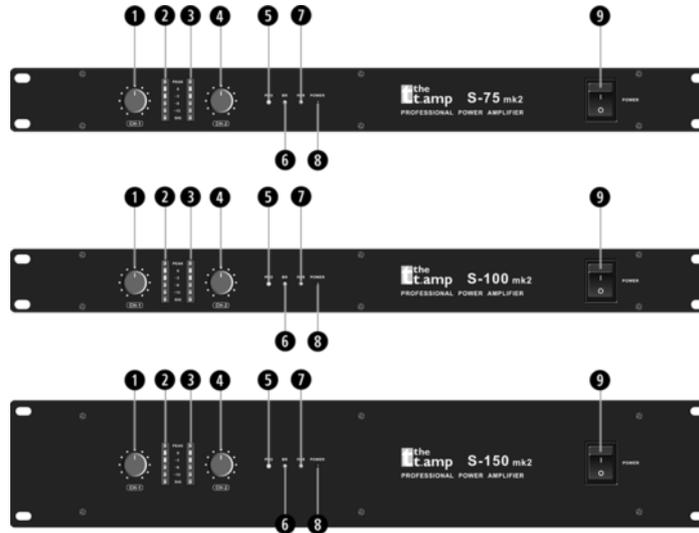
The device generates strong magnetic fields that can interfere with the function of poorly shielded devices. The strongest magnetic fields are directly above and below the power amplifier. Therefore, never place sensitive devices such as pre-amplifiers, radio transmission systems, or tape decks directly 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

- Output power  $2 \times 45 \text{ W}$  to 250 W (depending on the model)
- NL4 (Speakon) and binding-post connectors for speakers
- All protection circuits including soft start
- Input level can be switched from  $-0$  to  $+4 \text{ db}$
- Fanless operation
- Automatic standby (can be disabled)

## 4 Connections and controls

### Front panel



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1	<b>CH-1: Input level controller for channel 1</b> Use the input level controllers CH-1 and CH-2 <b>(4)</b> on the front panel to control the signal amplification in the respective channel. If possible, turn this control fully to the right stop (= 0 dB attenuation) for optimal headroom. Professional power amplifiers then output their rated power, if the input voltage is 0.775 V resp. 1.4 V (depending on the position of the switch for the input sensitivity <b>[19]</b> ).
2/3	<b>PEAK: Indicator for signal and maximum level</b> These LED chains indicate the output power of the device in the respective channel. The PEAK indicator lights up when the output power reaches its maximum. If this indicator lights up continuously, the volume of the respective channel must be reduced. To do so, turn to the input level knob counter-clockwise.
4	<b>CH-2: Input level controller for channel 2</b> Input level controller for channel 2, functionality is equal to point <b>(1)</b> .

5	<b>PRO: Indicator for activated protection circuit</b> This indicator lights up, if one of the following situations arises in one of the channels: <ul style="list-style-type: none"><li>• 3-5 seconds after switching on, as the speakers are still electrically disconnected from the power amp.</li><li>• The temperature of the output transistors exceeds 85°C.</li><li>• A malfunction exists in the device.</li></ul>
6	<b>BR: Indicator for mono operation in bridged mode</b> Please read more about the available operating modes in chapter .
7	<b>PAR: Indicator for mono operation in parallel mode</b> Please read more about the available operating modes in chapter .

**8 POWER: Power indicator light**

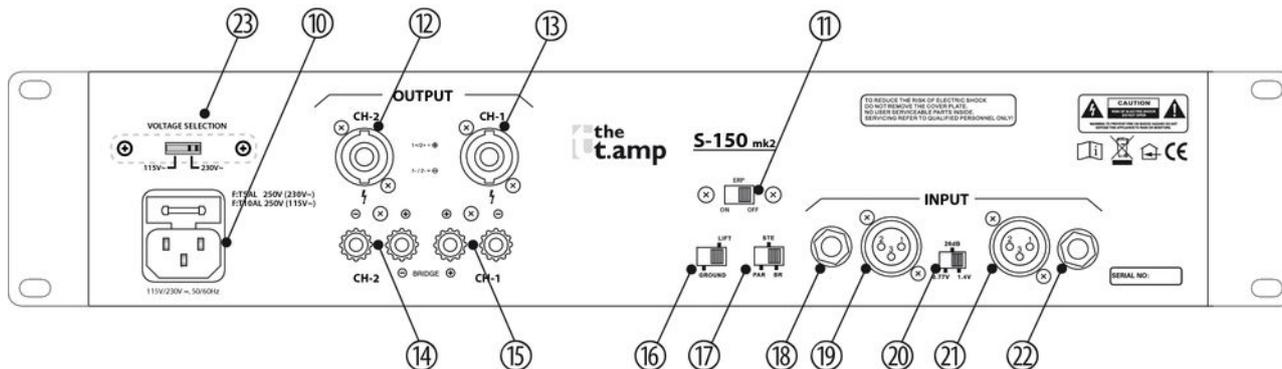
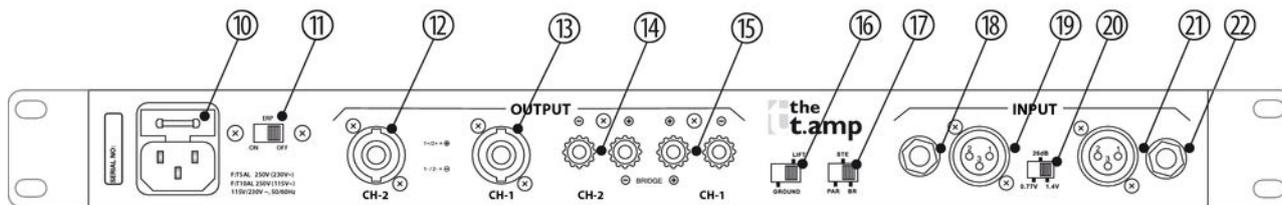
Lights up green when the unit is turned on. In standby mode, the LED lights red. When the unit receives a signal again, it switches back to normal mode and the LED lights green again.

**9 POWER: On / off switch (9)**

This switch turns the power on and off. When switching on the protection circuits are activated. After a few seconds you will hear two "clicks" - now the speakers are electrically connected to the amplifier and the device is ready to operate.

When switching on electronic devices, especially power amps, the power consumption is particularly high. Make sure you don't turn on too many devices simultaneously. Otherwise, the power supply circuit may be overloaded and the RCD will disconnect the power supply.

Rear panel



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10	<b>Mains connector with fuse holder</b> Connect the supplied power cord here and supply the device with mains voltage.
11	<b>ERP ON   OFF</b> 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.
12/13	<b>Speaker outputs CH-1/2</b> Connect speakers to the speaker outputs of channel 1 and 2 using SPK cables (wiring = 1+ 2+ 1- 2-).
14/15	<b>Speaker terminals CH-1/2</b> You can connect the speakers either with cable lugs or bare wire to the cable terminals on the rear panel.

16	<b>GROUND/LIFT switch</b> In normal operation signal source and power amplifier should share the same ground potential. In some constellations this admittedly leads to ground loops and thus to humming. If this happens vary the toggle switch setting for ground potential on the rear panel of the unit. This switch connects in one setting the shield/ground of the input signal with the housing of the power amp and thus with mains earthing. In the other setting there is no electrical connection between the shield/ground of the input signal and the power amp housing.
17	<b>STE / PAR / BR</b> Use this switch to select the operating mode of the power amp: stereo (STE), parallel (PAR) or bridged (BR).
18	<b>CH-2</b> Connect the line-level signals to be amplified to the 1/4" balanced TRS phone jack input of Channel 2 using a 1/4" phone jack cable.
19	<b>CH-2</b> Connect the line-level signals to be amplified to the XLR input of Channel 2 using a XLR cable.

20	<b>0.77V   1.4V   26dB</b> <p>The input level at which the power amplifier delivers its rated output power can be switched between 0,775 V<sub>RMS</sub> and 1,4 V<sub>RMS</sub>. Often multiple amplifiers are used simultaneously. In this case, switch to the "26 dB" position, the signal will then be amplified by all amps equally. Thus, you can combine different power amps of the S-series, and always get the same output level.</p>
21	<b>CH-1 (MONO)</b> <p>Connect the line-level signals to be amplified to the XLR input of Channel 1 using a XLR cable.</p>
22	<b>CH-1 (MONO)</b> <p>Connect the line-level signals to be amplified to the 1/4" balanced TRS phone jack input of Channel 1 using a 1/4" phone jack cable.</p>
23	<b>Switch for power supply voltage</b> <p>Before connecting the amplifier to the mains power supply, ensure that the mains voltage switch on the bottom side (or rear side for S-150) is in the position that corresponds to the actual power available (in Germany AC 230 V). If in doubt, consult an electrician.</p>

## 5 Installation and starting up

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.

### **Models S-75 and S-100**

#### **Rack mounting**

The unit has been designed for rack mounting in a standard 19-inch rack; it occupies one rack unit.

### **Model S-150**

#### **Rack mounting**

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

### 5.1 Tips on handling speakers

We recommend you to set up the speakers in a way, that the sound signals can reach the audience unobstructedly. It will often be helpful to mount the speakers on tripods. Thus, the sound will be evenly spread with maximum range throughout the audience area.

Always use high grade cable to connect your equipment. Otherwise you won't reach maximum sound quality.

For optimum results both impedance and power handling of the speakers must match the requirements of the amplifier. Always follow the technical specifications of the speakers! The overall impedance of the connected loudspeakers must not exceed the minimum output impedance of the amp. The amps max. RMS output power should be 50 % above the power handling capacity of the connected speakers.

If you notice distortion during operation, either the amp or the speaker is overloaded. This may permanently damage the amp or the speaker. Always reduce the volume when you hear distortion.

## 5.2 More useful tips

### Possible operation modes

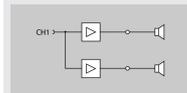
Depending on the individual application, the amplifier can be used in different operation modes:

#### Stereo mode



The two amplifier channels operate independently of one another, either channel (CH1 and CH2) 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 CH1 and loudspeakers are connected to each amplifier, the volume for both outputs is controlled by the volume control of CH1.

### 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 CH1 is amplified and loudspeakers are connected only to the correspondingly marked output. The volume is controlled by the volume control of CH1.

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](http://www.thomann.de)).

## 6 Technical specifications

Model no.	S-75	S-100	S-150
Output power			
stereo 8 $\Omega$	2 x 45 W	2 x 65 W	2 x 85 W
stereo 4 $\Omega$	2 x 75 W	2 x 100 W	2 x 150 W
bridged 8 $\Omega$	150 W	200 W	250 W
parallel 2 $\Omega$		200 W	
Frequency response	10 Hz - 50 kHz, -1.5 dB		
Input sensitivity	0.77 V / 26 dB / 1.4 V		
Maximum input level	21 dBV / 9 V		
Input impedance, active balanced	20 k $\Omega$		
Signal-to-noise ratio, A-weighted, RMS	> 80 dB		> 85 dB
Crosstalk @ rated power, 8 $\Omega$ , 1 kHz	> 70 dB		

<b>Model no.</b>	<b>S-75</b>	<b>S-100</b>	<b>S-150</b>
Damping factor, $f=1$ kHz, $8 \Omega$	> 150 dB		
Slew rate	35 V/ $\mu$ s		40 V/ $\mu$ s
Protection circuits	Short circuit current limit, DC voltage fault, fuse for power supply, limiter, temperature, mains transients		
Indicator lights	Power (green), protection (yellow), clipping (red), bridged mode operation (green), parallel mode operation (green)		
Cooling	Fanless		
Power consumption @ half output power, $8 \Omega$	65 W	100 W	120 W
Power supply voltage	AC 115 V / 230 V, 50-60 Hz		
Dimensions (W $\times$ D $\times$ H) in mm	483 x 330 x 44	483 x 330 x 44	483 x 320 x 88

## 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)**



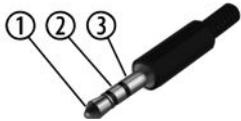
1	Signal (left)
2	Signal (right)
3	Ground

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



1	Signal
2	Ground

## 3.5 mm TRS phone plug (mono, balanced)



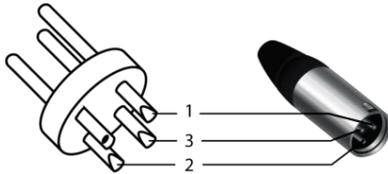
1	Signal (in phase, +)
2	Signal (out of phase, -)
3	Ground

## Three-pole 1/8" mini phone jack (stereo, unbalanced)



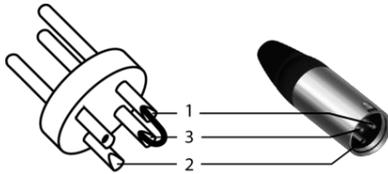
1	Signal (left)
2	Signal (right)
3	Ground, shielding

**XLR plug (balanced)**



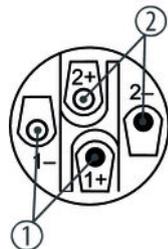
1	Ground, shielding
2	Signal (in phase, +)
3	Signal (out of phase, -)

**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)

## 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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