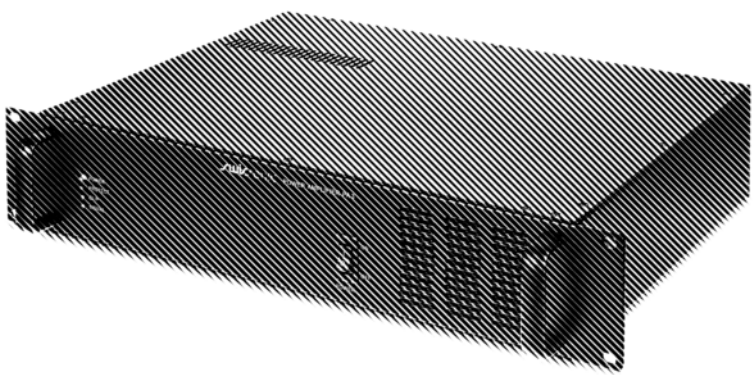

swissonic

# PA 3

## power amplifier

th•mann
MUSIC IS OUR PASSION

user manual

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# Table of contents

# 1 General information

This manual contains important instructions for the safe operation of the unit. Read and follow the safety instructions and all other instructions. Keep the manual for future reference. Make sure that it is available to all those using the device. If you sell the unit please make sure that the buyer also receives this manual.

Our products are subject to a process of continuous development. Thus, they are subject to change.

## 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 unit amplifies audio frequency signals for the operation of passive loudspeakers. It is designed for professional use only. 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!**

**Hazardous voltage**

Hazardous voltage may be present at cable ends and screw terminals.

The connection of screw terminals as well as all maintenance and repair work on the electrical installation of the device must only be performed by qualified electrical personnel in volt-free condition. Failure to do so may result in electric shock and risk of fire and loss of life.

By all means you have to observe all electrical safety instructions applicable at the place of operation.

**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 damages by using an external battery**

Improper handling may cause an arc or short circuit between the bare ends of a live power cable to an external battery. This can destroy the battery and there is a fire hazard!

If you use an external battery for power supply, connect the power cord to the screw terminal on the rear panel first. Then connect the free ends of the cables to the battery poles. Pay attention to the polarity marking! To disconnect the battery, unscrew the cables on the battery first, then on the terminals of the device.

Also pay attention to the safety instructions of the battery manufacturer.

# 3 Features

- Flexible high-performance power stage for PA application
- 240 W (RMS)
- Inputs: XLR, 1/4" phone socket (unbalanced), RCA sockets, screw terminals
- Outputs:
  - Screw terminals for loudspeakers, optionally in 4 Ω, 70 V or 100 V technology
  - Line output for connecting additional power stages (XLR, unbalanced 1/4" phone socket, RCA sockets, screw terminals)
- Protection circuits: DC short-circuit protection, overheat protection

# 4 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.

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!**

**Hazardous voltage**

Hazardous voltage may be present at cable ends and screw terminals.

The connection of screw terminals as well as all maintenance and repair work on the electrical installation of the device must only be performed by qualified electrical personnel in volt-free condition. Failure to do so may result in electric shock and risk of fire and loss of life.

By all means you have to observe all electrical safety instructions applicable at the place of operation.

**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.

**Speaker connection**

You can choose to either connect low-ohm loudspeakers with a total impedance of 4 Ω or ELA speakers (70 V technology or 100 V technology). Observe the following diagram when connecting the loudspeakers. The connectors are located under a removable cover. Replace this cover after connecting the speakers and before you turn on the power.

**Low-ohm speakers**

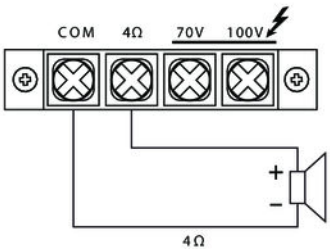
On the output of the amplifier, the overall impedance resulting from the individual impedances of the connected speakers must not fall below the minimum allowable impedance of the amp's output, for this model 4 Ω. If you want to connect multiple speakers to the amplifier output, note the following:

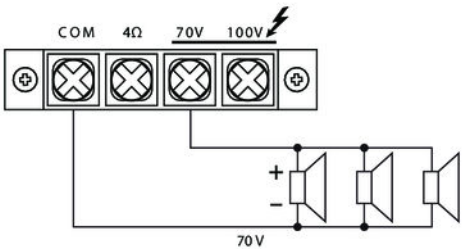
- when connecting speakers in series, the impedances add up.
- when connecting speakers in parallel, the reciprocal value of the total impedance is equal to the sum of the reciprocal values of the individual impedances.

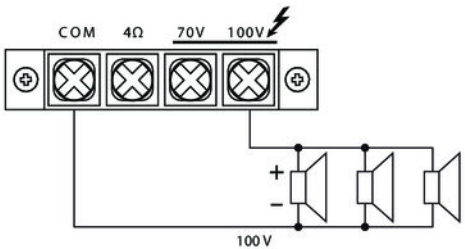
This means, for example with two speakers with the same impedance: In series connection, impedance is doubled. In parallel connection, it's halved.

**ELA speakers**

The total power consumption of the connected speakers must be below the maximum power of the amplifier. We recommend a power reserve of 20 %.




**DC connection**

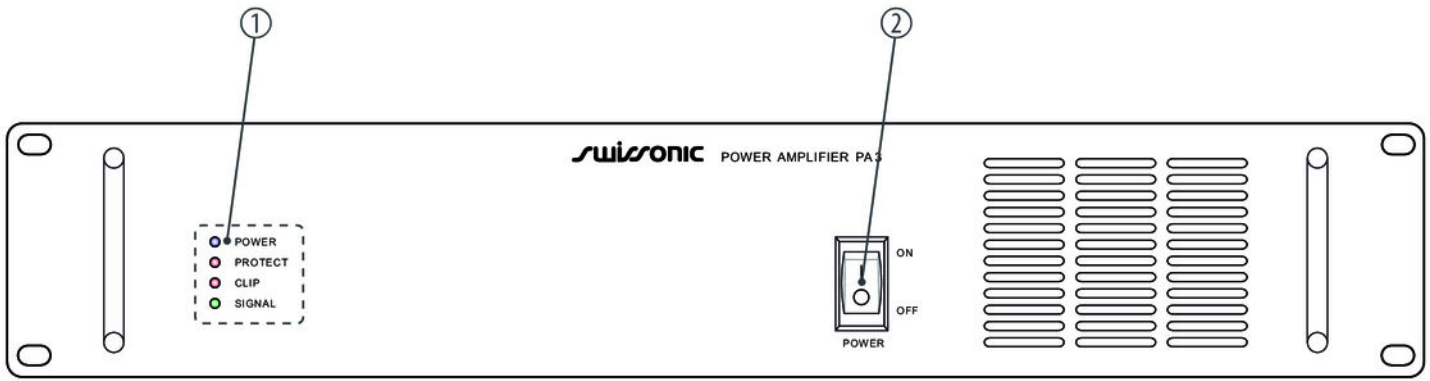
The device can be supplied with 24 V DC voltage. Before connecting, ensure that the cable cross-sections are sufficient.

**Rack mounting**

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

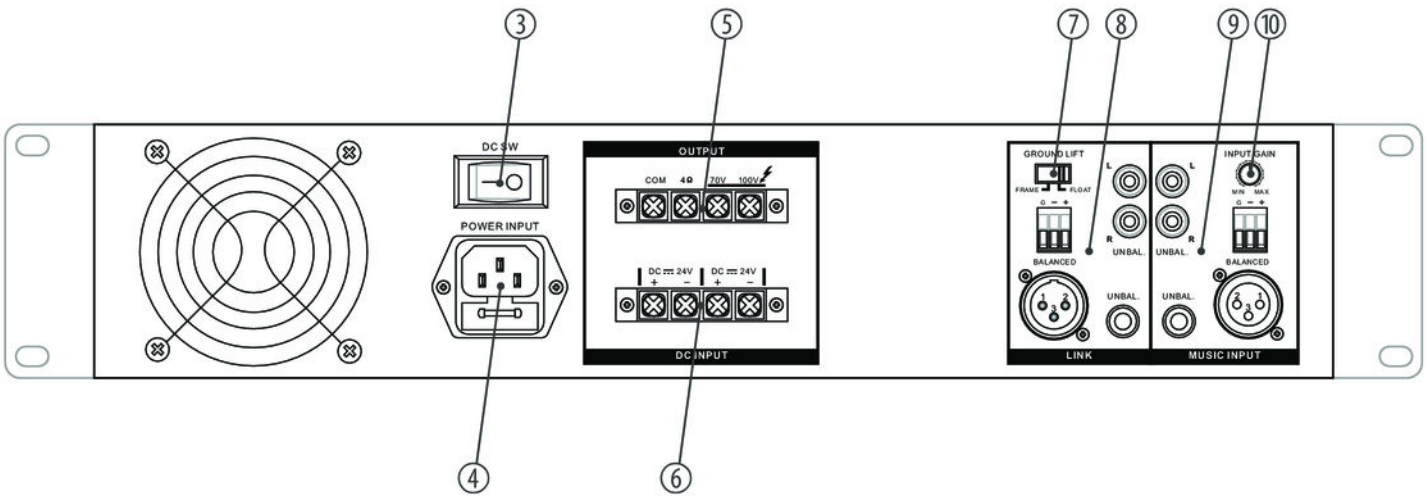
# 5 Connections and controls

**Front panel**



| | | |
|---|---|---|
| 1 | LED panel | |
| | *[POWER]* | This LED shows that the device is turned on. |
| | *[PROTECT]* | Lights up when one or more protective circuits have tripped or the device is defective. |
| | *[CLIP]* | Lights up when the channel is overdriven. In this case, use the *[INPUT GAIN]* control to reduce the signal level until the LED goes out again. |
| | *[SIGNAL]* | Indicates the presence of an input signal. The higher the signal level, the faster the LED flashes. |
| 2 | *[POWER]*<br>Mains switch. Switches the device on and off. | |

**Rear panel**


3
5
7
8
9
10
DC SW
POWER INPUT
OUTPUT
COM
4Ω
70V
100V
DC INPUT
GROUND LIFT
FRAME
FLOAT
L
R
UNBAL.
BALANCED
INPUT GAIN
MIN
MAX
LINK
MUSIC INPUT
4
6

| | |
|---|---|
| 3 | *[DC SW]*<br><br>Resettable fuse. The fuse shuts down when the power amp's current drain is too high or when the loudspeaker output is short-circuited. To reset, disconnect the connected speakers and turn the switch back on. If the switch trips again, there is a defect. |
| 4 | *[POWER INPUT]*<br><br>IEC chassis plug for operating voltage supply with fuse holder. Before connecting to the power supply, check that the voltage selector on the bottom of the unit is in the correct position.<br><br>Should the fuse have blown, disconnect the unit from the power supply and replace the fuse with a new fuse of the same type. |
| 5 | *[OUTPUT]*<br><br>Loudspeaker output screw terminals The connectors are located under a removable cover. Replace this cover after connecting the speakers and before you turn on the power. |
| 6 | *[DC INPUT]*<br><br>Screw terminals for the power supply with direct current (24 V), for example with an uninterrupted power supply. If the mains voltage fails, the DC input is automatically engaged. |

| | |
|---|---|
| 7 | *[GROUND LIFT]*<br>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. |
| 8 | *[LINK]*<br>Line level outputs for connecting additional devices (e.g. amplifiers, recording devices or active speakers), designed as RCA sockets, XLR chassis socket, screw terminals and 1/4" socket. |
| 9 | *[MUSIC INPUT]*<br>RCA signal input sockets, XLR chassis plug, screw terminals and 1/4" phone socket. |
| 10 | *[INPUT GAIN]*<br>Input signal gain control. |

# 6 Technical specifications

| | |
|---|---|
| Power output (RMS) | 240 W |
| Frequency response, ±1 dB | 30 Hz … 20 kHz (0 / –3 dB) |
| Amplification control | –80 dB … 0 dB |
| Signal-to-noise ratio | > 85 dB |
| Total harmonic distortion @ 50 % of maximum output power | < 1 % |
| Voltage supply | AC 110/230 V ~ 50 Hz or 24 V ⎓ |
| Fuse | 110 V: 5 mm × 20 mm, 10 A, 250 V, slow-blow<br>230 V: 5 mm × 20 mm, 5 A, 250 V, slow-blow |
| Dimensions (W × H × D) | 482 mm × 88,8 mm × 320 mm |
| Weight | 10.1 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.

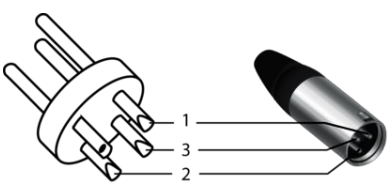
In a professional environment, therefore, the balanced transmission is preferred, because this enables an undisturbed transmission of signals over long distances. In addition to the conductors 'Ground' and 'Signal', in a balanced transmission a second core is added. This also transfers the signal, but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

**XLR plug (balanced)**




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