Pro Audio
Germany

Operation Manual

SQ-1200 | SQ-1600 | SQ-2000| SQ-2400

SQ-1604 | SQ-2404 | SQ-3204

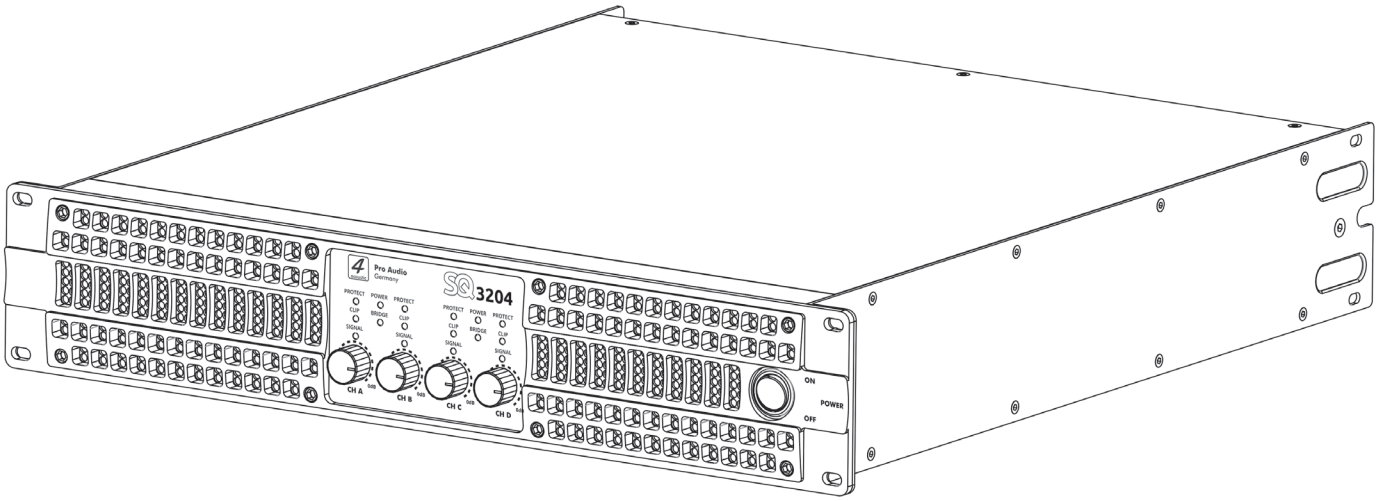


Table of Content

1.1) EXPLANATIONS OF GRAPHICAL SYMBOLS

The triangle with the lightning bolt is used to alert the user to the risk of electric shock.

WARNING

To reduce the risk of Electric Shock, do not attempt to open any parts of the unit. No user serviceable parts inside. Refer servicing to qualified service personal.

To completely disconnect this apparatus from the AC Mains, disconnect the power supply cord plug from the AC receptacle.

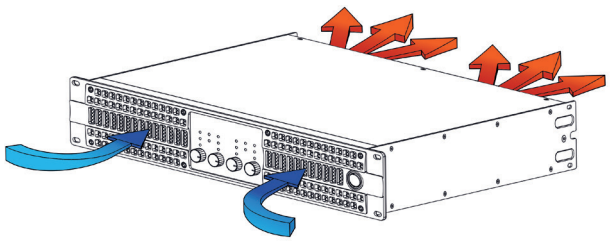
The Mains plug of the power supply cord must remain readily accessible.

Do not expose this equipment to rain or moisture, dripping or splashing liquids. Objects filled with liquids, such as vases, should not be placed on this apparatus.

Connection to the Mains shall be done only by an electrotechnical skilled person according the national requirements of the countries where the unit is used.

The triangle with the exclamation point is used to alert the user to important operating or maintenance instructions.

When the unit is installed in a cabinet or a shelf, make sure that it has sufficient space on all sides to allow for proper ventilation. (50 cm from the front and rear Ventilation Openings)



The CE-mark indicates the compliance with the low voltage and electromagnetic compatibility.

Symbol for earth/ground connection.

Symbol indicating that the equipment is for indoor use only.

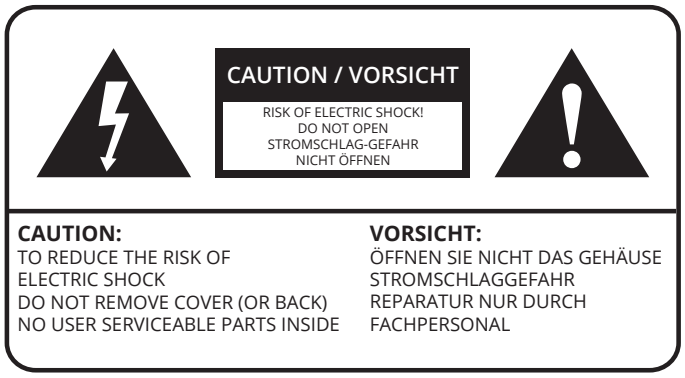
Symbol for conformity with Directive 2002/96/EC and Directive 2003/108/EC of the European Parliament on waste electrical and electronic equipment (WEEE).

RoHS

The RoHS Symbol shows that this product is RoHS compliant.

1.2) EXPLANATIONS OF RISK

Before using the device, be sure to carefully read the safety instructions. Keep this document with the device at all times.



1.3) IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Use the mains plug to disconnect the apparatus from the mains.
16. WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.
17. Do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
18. The mains plug of the power supply cord shall remain readily operable.
19. Do not connect the unit's output to any other voltage source such as battery, mains source, or power supply, regardless of whether the unit is turned on or off.
20. Do not remove the top (or bottom) cover. Removal of the cover will expose hazardous voltages. There are no user serviceable parts inside and removal may void the warranty.
21. An experienced user shall always supervise this professional audio equipment, especially if inexperienced adults or minors are using the equipment.
22. The US National Differences clause 16.3 requires that network cables must be flame rated VW-1.

2.1) EC Declaration of Conformity

Manufacturer:
4-Acoustic Pro Audio Germany
INLINE Marketing GmbH
Bunsenstrasse 32
59227 Ahlen, Germany

We declare that under our sole responsibility the the products:

Audio Power Amplifier
SQ-1200, SQ-1600, SQ-2000, SQ2400
SQ-1604, SQ-2404, SQ-3204

are in conformity with the provisions of the following EC Directives, including all amendments, and with national legislation implementing these directives:

- **2006/95/EC Low Voltage Directive**
- **2004/108/EC Electromagnetic Compatibility Directive**
- **2002/95/CE RoHs Directive**

The following harmonized standards are applied:
EN 55103-1:2009 /A1:2012
EN 55014-1:2006 /A1:2009 /A2:2011
EN 55022:2010 /AC:2011
EN 61000-3-2:2006 /A1:2009 /A2: 2009
EN 61000-3-3:2013
EN 61000-3-11:2000
EN 61000-3-12:2011
EN 55103-2:2009 /IS:2012
EN 61000-4-2:2009
EN 61000-4-3:2006 /A1:2008 /IS1:2009 /A2:2010
EN 61000-4-4:2012
EN 61000-4-5:2006
EN 61000-4-6:2014
EN 61000-4-11:2004
EN 60065:2002 /A1:2006 /A11:2008 /A2:2010 /A12:2011

Ahlen, 01st November 2020

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2.2) FCC Compliance Notice

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: This equipment has been tested and found to comply with the limits for a Class H digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- **Reorient or relocate the receiving antenna.**
- **Increase the separation between the equipment and receiver.**
- **Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.**
- **Consult the dealer or an experienced radio/TV technician for help.**

2.3) WEEE Directive

If the time arises to throw away your product, please recycle all the components possible.

This symbol indicates that when the end-user wishes to discard this product, it must be sent to separate collection facilities for recovery and recycling. By separating this product from other household-type waste, the volume of waste sent to incinerators or land-fills will be reduced and natural resources will thus be conserved.

The Waste Electrical and Electronic Equipment Directive (WEEE Directive) aims to minimize the impact of electrical and electronic goods on the environment. 4-Acoustic comply with the Directive 2002/96/EC and 2003/108/EC of the European Parliament on waste electrical finance the cost of treatment and recovery of electronic equipment (WEEE) in order to reduce the amount of WEEE that is being disposed of in land-fill site. All of our products are marked with the WEEE symbol; this indicates that this product must NOT be disposed of with other waste. Instead it is the user's responsibility to dispose of their waste electrical and electronic equipment by handing it over to an approved reprocessor, or by returning it to 4-Acoustic for reprocessing. For more information about where you can send your waste equipment for recycling, please contact 4-Acoustic or one of your local distributors.

Welcome at 4-Acoustic

Thank you for selecting our SQ-Series amplifier for your sound system demand.

We are confident that you will be satisfied with the professional features, excellent performance and reliable durability offered by this series.

4-Acoustic SQ-Series amplifiers can be used in an unlimited range of PA applications such as touring, clubs, opera houses, theaters, churches, cinema, and theme parks.

For safe installation and use of this amplifier please study this operation manual thoroughly to become acquainted with the basic configuration and control options available.

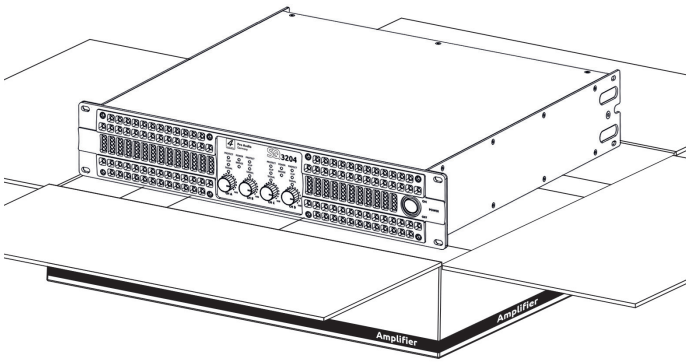
It provides a brief introduction to the features and functionality of the SQ-Series amplifier, and it also contains the information required to safely install the product and place it in service.

It is recommended that you also review all other product documentation to ensure familiarity with the various configuration and control options.

Thank you again for your confidence in 4-Acoustic products.

Detlef Risse

4.1) Unpacking & Checking For Shipping Damage



First carefully inspect the shipping package before opening it.
If you find any damage notify the shipping company immediately.

If there is no damage at the packing open it and immediately inspect your new amplifier.
Your 4-Acoustic amplifier has been completely tested and inspected before leaving the factory.

The box contains the following:

- SQ-Series amplifier
- This operation manual

We recommend that you save all packing materials for use if you ever need to transport the unit. Never ship the unit without the factory carton and packing materials.

Disposal of the packing material. The transport and protective packing have been selected from materials which are environmentally friendly for disposal and can normally be recycled. Rather than just throwing these materials away, please ensure they are offered for recycling.

5.1) Installing Your Amplifier

CAUTION

Before you begin, make sure your amplifier is disconnected from the power source.

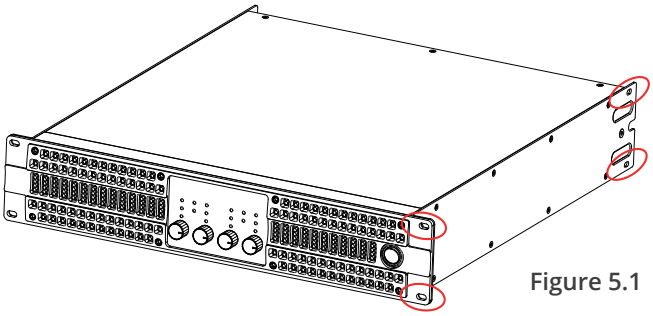


Figure 5.1

The common installation of the SQ-Amplifier Series is in 19“ standard rack cabinets. In order to limit the risk of mechanical damages, the amplifiers must be fixed to the rack using both frontal and rear mounting brackets. (See Figure 5.1)

Note: Instead of connecting the amplifier to the power grid directly, plug the amplifier’s mains connections to a power distribution panel inside the rack cabinet.

Proper Cooling
When using an equipment rack, mount units directly on top of each other. Close any open spaces in the rack with blank panels. (Open spaces will reduce cooling efficiency.) DO NOT block front or rear air vents. The rack should be a minimum of two inches (5.1 cm) away from the amplifier, and the back of the rack should be a minimum of four inches (10.2 cm) from the amplifier back panel. Air flow is front to back as illustrated in Figure 5.2.

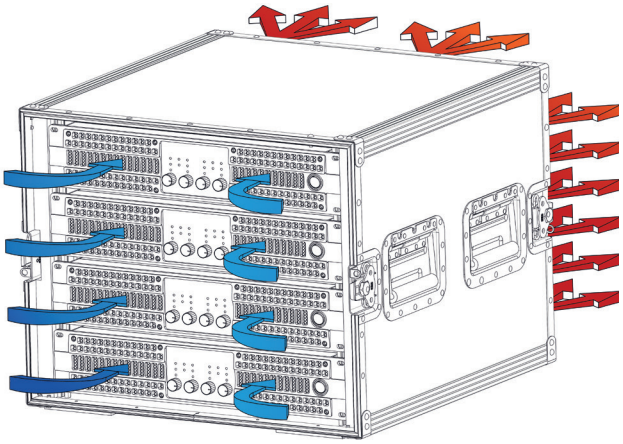
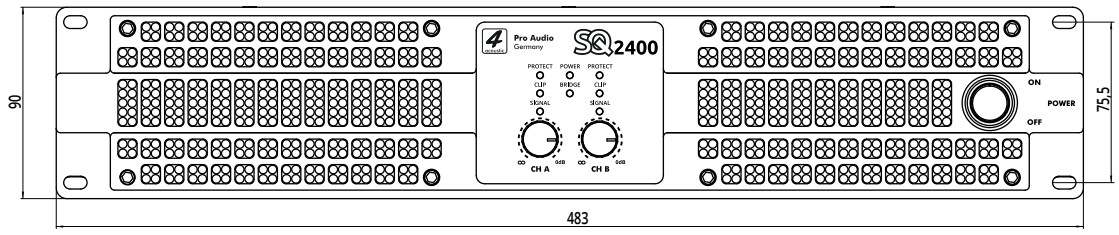
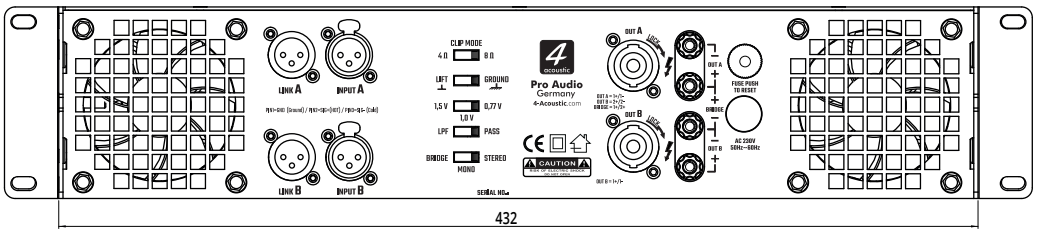


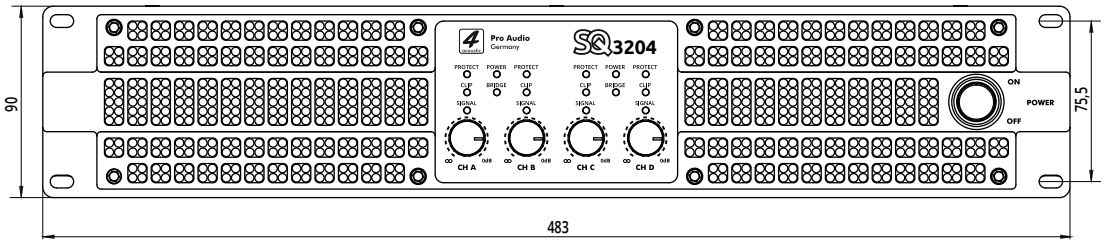
Figure 5.2

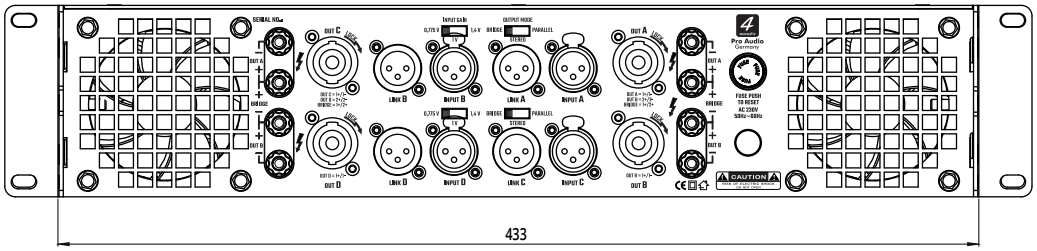
6.1) SQ-1200, SQ-1600, SQ-2000, SQ2400 Dimensions

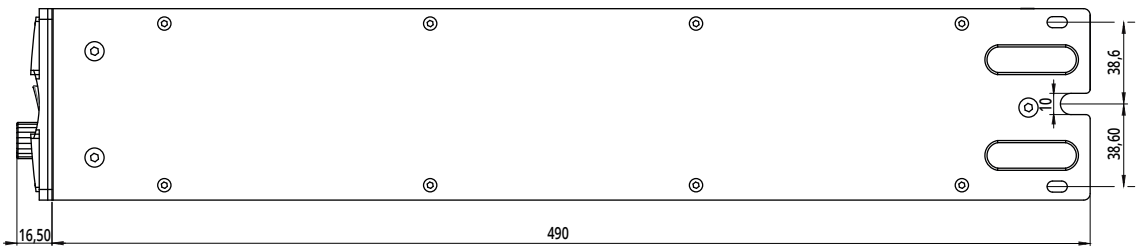




6.2) SQ-1604, SQ-2404, SQ-3204 Dimensions

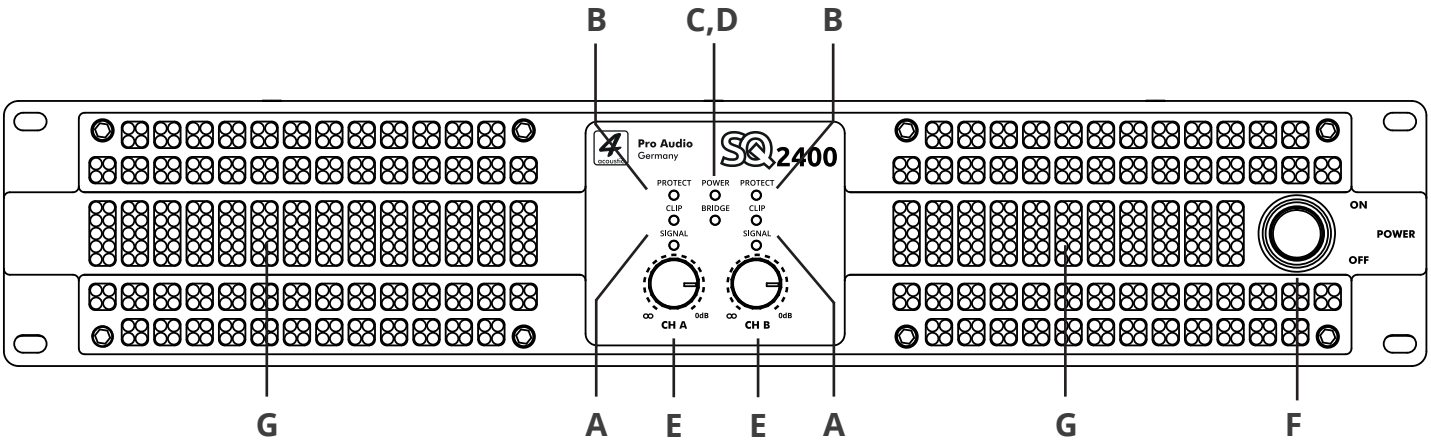






7.) CONTROLS AND INDICATORS

7.1) SQ-1200, SQ-1600, SQ-2000, SQ2400 Front Panel



A - Level and Signal Indicators

LEDs indicate signal presence and cliping:

Signal green = -20dB below rated output
Clip red = clipped signal detected at Input or Output

B - Protect Mode

Indicator Illuminates when the amplifier output has stopped operating.

C - Power CH A/B

Indicator Illuminates when power supply is activated for channel 1/2.

D - Bridge Mode CH A/B

Indicator (yellow) Illuminates when Bridge Mode is activated for channel pair A/B.

E - Gain Control

Output level control for each channel.

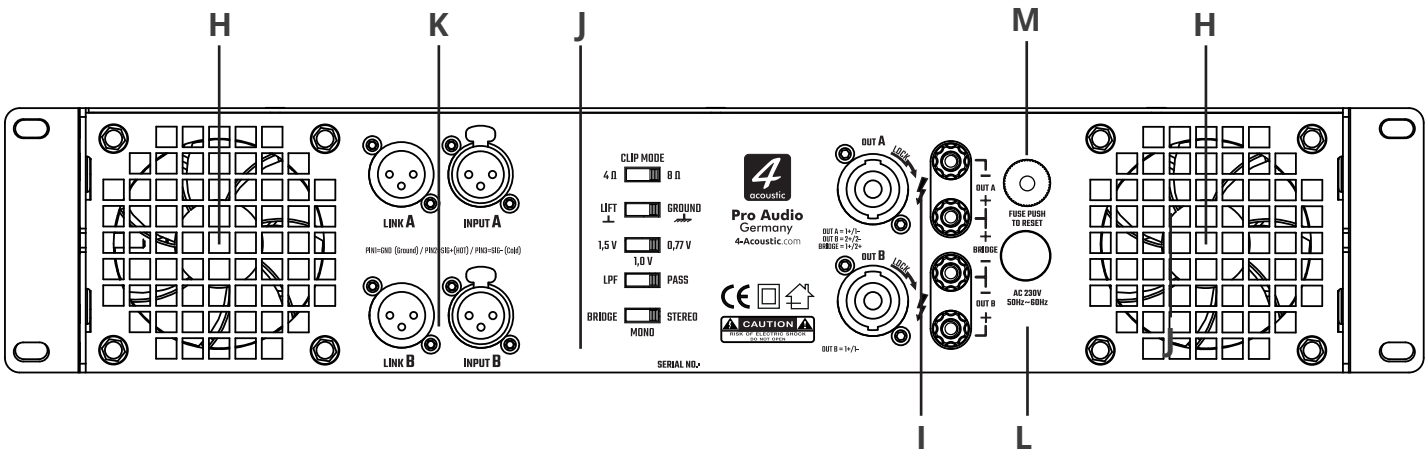
F - Power Switch

Power LED´s Illuminate when the amplifier is connected to the mains power supply and switched on.

G - Cooling Vent Grille

Provides cooling air flow ventilation from front to back. Do not block or cover these vents.

7.2) SQ-1200, SQ-1600, SQ-2000, SQ2400 Back Panel



H - Cooling Fan Outlet

Outlet for cooling air flow. Do not block or cover this outlet

I - Speaker Output Section

Spkn and Binding Post connector per channel connect to loudspeakers.

J - Switches

Switches for input mode and sensitivity setup.

K - Analog Input Section

Balanced Analog Inputs and Loop-Through Outputs for each channel. A 3-pin female XLR connector for the signal input and a 3-pin male XLR for the link throu output are provided for each channel. The signal at the link outputs are paralle-led with the input signal for feeding the input signal to other amplifiers.

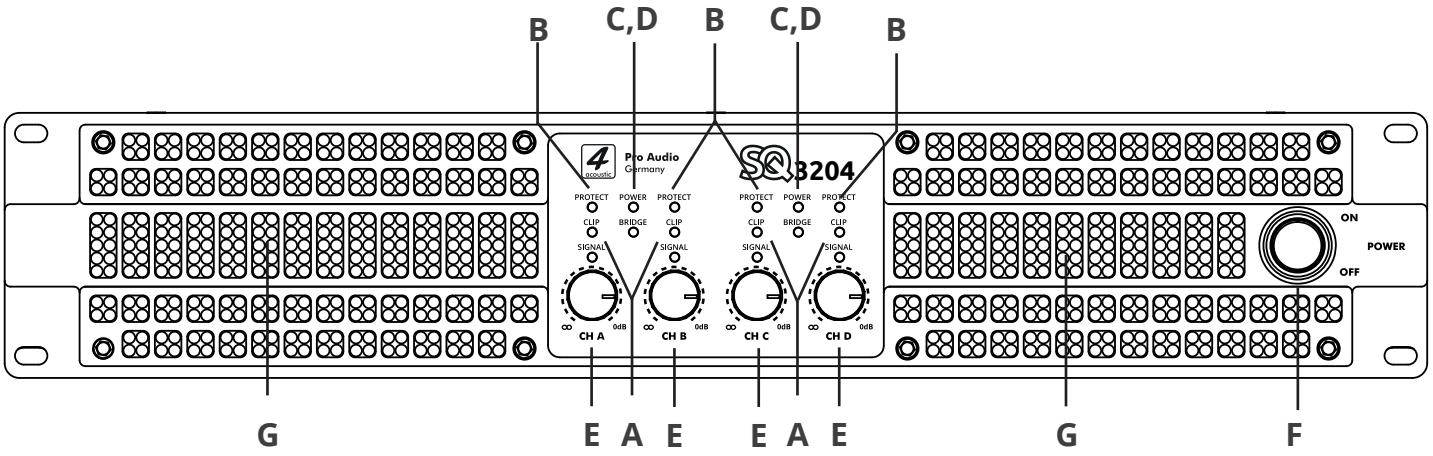
L - AC Mains Powercord

Powercord with power supply plug

M - Fuse

Resetable Fuse

7.3) SQ-1604, SQ-2404, SQ-3204 Front Panel



A - Level and Signal Indicators

LEDs indicate signal presence and cliping:

Signal green = -20dB below rated output
Clip red = clipped signal detected at Input or Output

B - Protect Mode

Indicator Illuminates when the amplifier output has stopped operating.

C - Power CH A/B and C/D

Indicator Illuminates when power supply is activated for channel A/B and C/D.

D - Bridge Mode CH A/B, C/D

Indicator (yellow) Illuminates when Bridge Mode is activated for channel pair A/B or C/D.

E - Gain Control

Output level control for each channel.

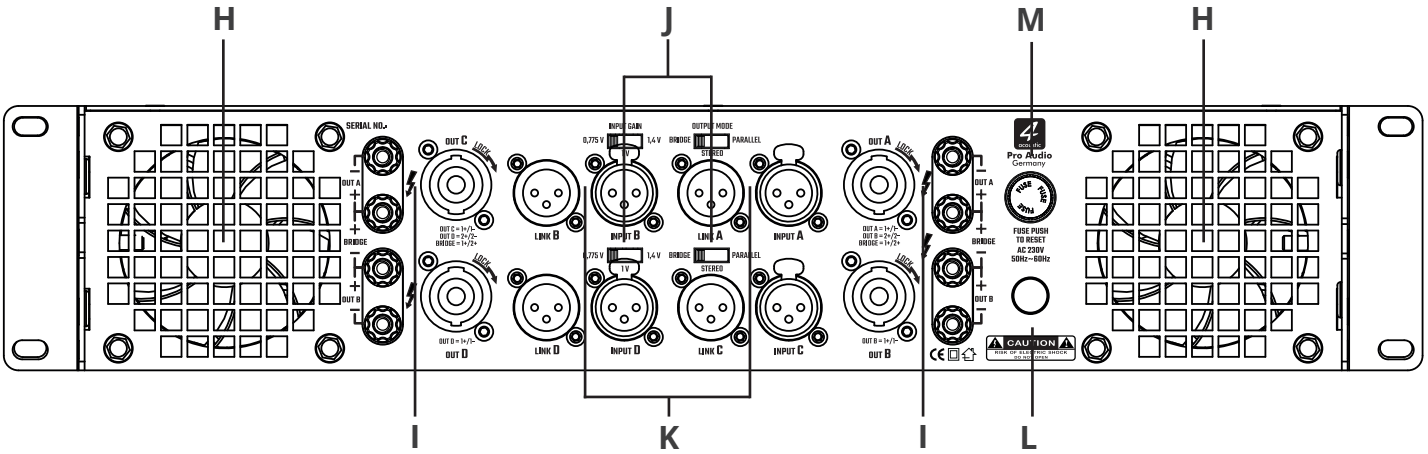
F - Power Switch

Power LED´s Illuminate when the amplifier is connected to the mains power supply and switched on.

G - Cooling Vent Grille

Provides cooling air flow ventilation from front to back. Do not block or cover these vents.

7.4) SQ-1604, SQ-2404, SQ-3204 Back Panel



H - Cooling Fan Outlet

Outlet for cooling air flow. Do not block or cover this outlet

I - Speaker Output Section

Spkn and Binding Post connector per channel connect to loudspeakers.

J - Switches

Switches for mode and sensitivity setup.

K - Analog Input Section

Balanced Analog Inputs and Loop-Through Outputs for each channel. A 3-pin female XLR connector for the signal input and a 3-pin male XLR for the link throu output are provided for each channel. The signal at the link outputs are paralle-led with the input signal for feeding the input signal to other amplifiers.

L - AC Mains Powercord

Powercord with power supply plug.

M - Fuse

Resetable Fuse

7.5) SQ-1200, SQ-1600, SQ-2000, SQ2400 Switch Settings

The two channel models offer the following control options by setting up the control switches.

Clip Mode: **To setup the internal clip limiter select the impedance of the speaker you are connecting to the amplifier. Select 4 Ohm or 8 Ohm.**

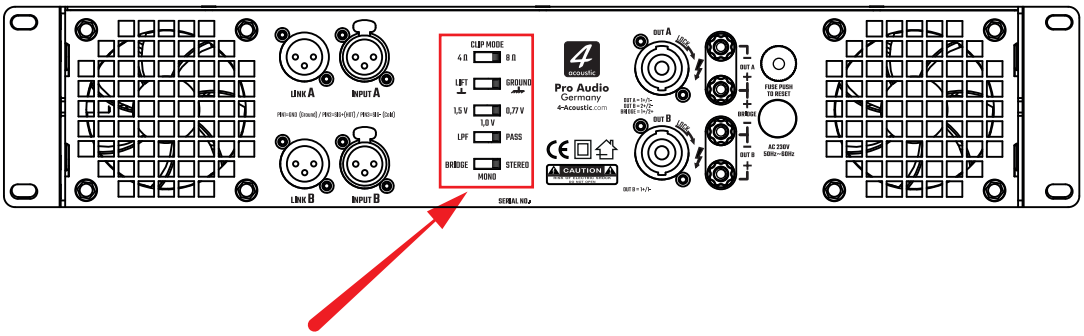
Ground Lift: **If nessary you can disconnect the signal ground from the amplifier. Select if the ground of the signal will be connected or not.**

Sensitivity Switches: **Select between three different input sensitivity level. (0,775V/1,0V/1,5V)**
The right setting and a correct system gain structure is very important to reach maximum signal headroom, less noise and avoid clipping at any position of your sound structure. Please refer to 9.7 Setting System Gain Structure.

Low Pass Filter: **To use subwoofer without a seperate crossover or DSP processor your SQ amplifier has a build in 100Hz/12dB low pass filter as a crossover for subwoofer.**
Select LPF if you want to use subwoofer without external crossover.

Input Mode: **Select between Stereo, Mono (Parallel) or Bridge Mode.**
If the switch is set to mono (parallel) mode the signal of the input socket CHA will be internal linked to the Input signal for CHB.
In bridge mode channel A and B become to one bridge mode channel with much more Power. Please refer to the details 9.8 Bridge Mode Function.
The lowest speaker impedance in bridge mode is 4 Ohm!

Figure 7.1



Clip Mode: CLIP MODE 4 Ω 8 Ω — Select if you connect 4Ω or 8Ω speaker to your amplifier.

Ground Lift: LIFT GROUND — Select if the signal ground is connected to the amplifier.

Sensitivity: 1,5 V 0,77 V 1,0 V — Select the input sensitivity.

Low Pass Filter: LPF PASS — 100Hz 12dB/Oct if use Subwoofer without external crossover.

Input Mode: BRIDGE STEREO MONO — Select between Mono (Parallel), Stereo and Bridge Mode.

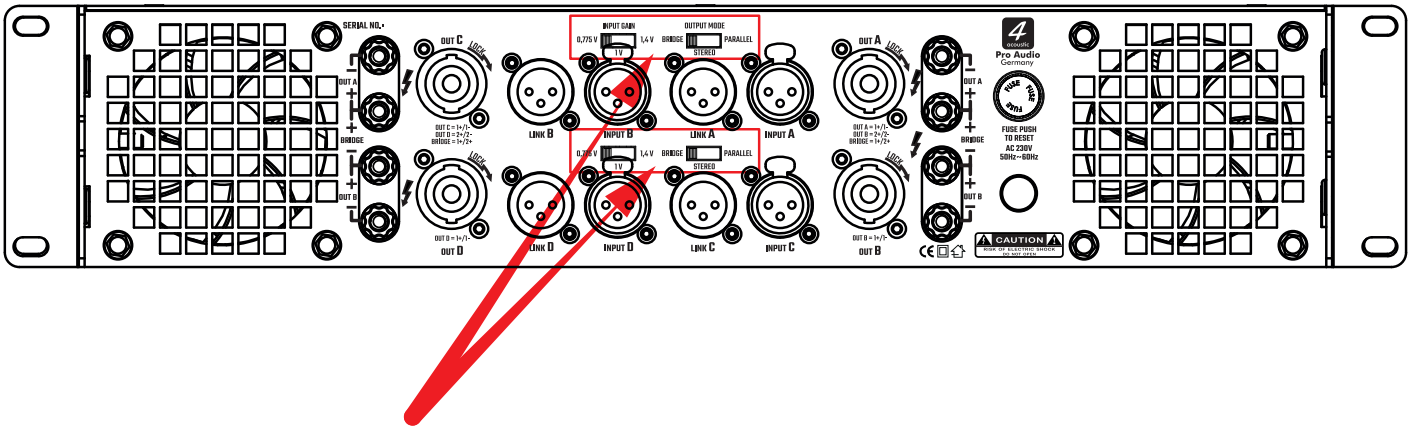
7.6) SQ-1604, SQ-2404, SQ-3204 Switch Settings

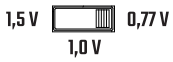
The four channel models offer the following control options by setting up the control switches.

Sensitivity Switches: **Select between three different input sensitivity level. (0,775V/1,0V/1,5V)**
The right setting and a correct system gain structure is very important to reach maximum signal headroom, less noise and avoid clipping at any position of your sound structure. Please refer to 9.7 Setting System Gain Structure.

Input Mode: **Select between Stereo, Mono (Parallel) or Bridge Mode.**
If the switch is set to mono (parallel) mode the signal of the input socket CHA will be internal linked to the Input signal for CHB. The signal of CHC will be linked to CHD.
In bridge mode CHA and CHB and (or) CHC and CHD become to one bridge mode channel with much more Power. Please refer to the details 9.8 Bridge Mode Function.
The lowest speaker impedance of each output in bridge mode is 4 Ohm!

Figure 7.2



Sensitivity: 

Select the input sensitivity CH-AB and CH-CD.

Input Mode: 

Select between Mono (Parallel), Stereo and Bridge Mode.

8.1) AC Mains Connection

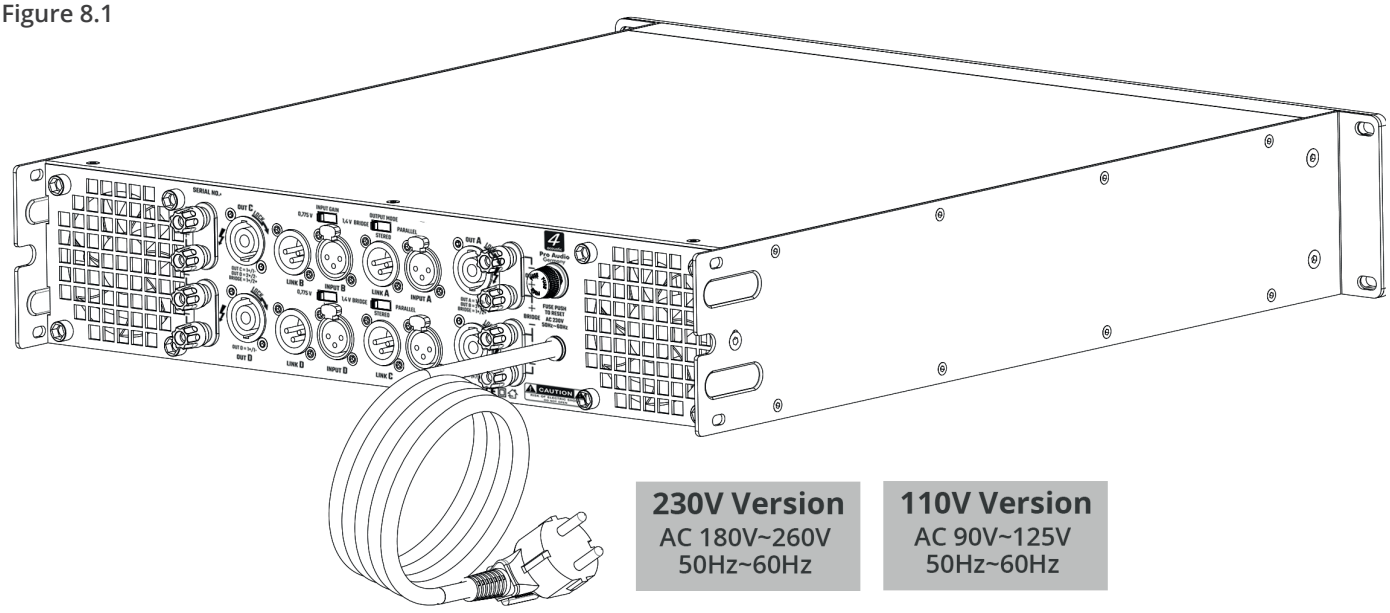
This amplifier comes with a mains power cord and plug used in your country. The AC mains voltage and current must be sufficient to deliver the power you need to drive this amplifier. Amplifiers don't produce energy so all the power the amplifier need to provide to your speaker comes out of your mains connection.

WARNING

The ground connection of the supplied AC power cord connector is a required safety feature. Do not attempt to disable this ground connection by using an adapter or other methods.

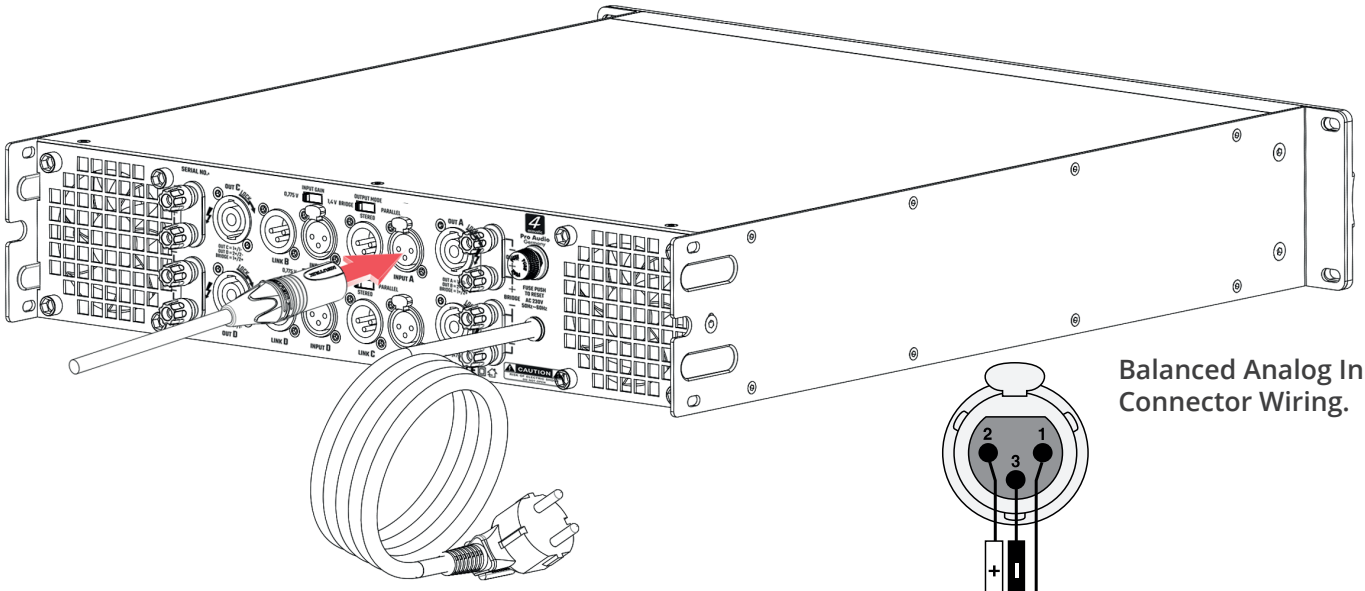
Please check the label on the back panel of your amplifier about the correct power supply. Make sure that your power source meets this requirement before you connect the mains supply. A wrong power supply could cause damage of your amplifier and connected equipment. If you are unsure please consult your electrician.

Figure 8.1



Before connecting the powersupply check if the amplifier is switched off. Connect the power cord with the Mains supply before you switch on your amplifier.

8.2) Audio Input Connection



Balanced Analog Input Connector Wiring.

Figure 8.2

XLR Connector wiring

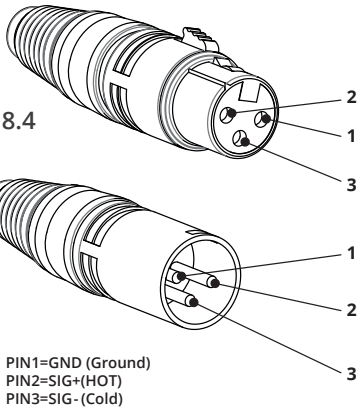
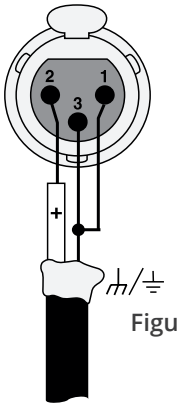


Figure 8.4



Unbalanced Analog Input Connector Wiring

Figure 8.3

The cable quality has a major impact on the sound quality of your entire audio system. Take care to always use high quality shielded wire cable for input wiring. The higher the density of the shield the better. Spiral wrapped shield should be not used.

- When using unbalanced lines keep the cables as short as possible and no longer than 3 meters.

- High-Level wiring such as loudspeaker wires or AC cords should not run together with audio signal cables. The chance of hum and noise being induced in the signal cables gets higher as closer this two groups of cable are.

To prevent the risk of overdriving and damage transducers always turn off the entire sound system before start connecting or change any connections.

Figure 8.2 shows connector pin assignments for balanced analog wiring

Figure 8.3 shows connector pin assignments for unbalanced analog wiring.

Figure 8.4 shows male and female XLR connector pin assignment.

Pre-build or professionally wired balanced cable (two-conductor plus shield) and connectors are recommended. (Figure 8.2)

Unbalanced line (Figure 8.3) may also be used but may result in noise over long cable runs.

8.3) Speaker Connection

Recommended are professionally wired, high quality, heavy gauge speaker wire and connectors with two or four conductors.

Figure 8.5 shows the wiring with a 4-pole Spkn connector.
Figure 8.6 shows the connecting with banana plugs, spade lugs, or bare wire.

WARNING

SHOCK HAZARD:
When the amplifier is turned on and passing a signal potentially lethal voltages exist at the speaker output connectors. Use Class 2 output wiring.

Figure 8.5

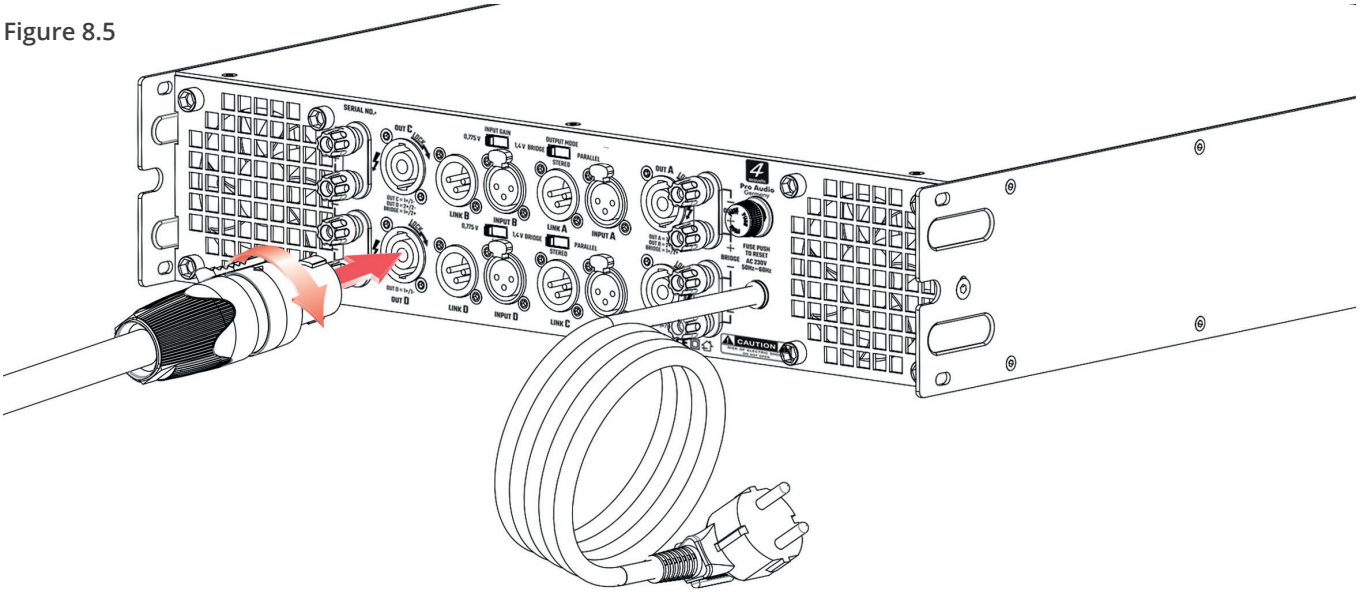
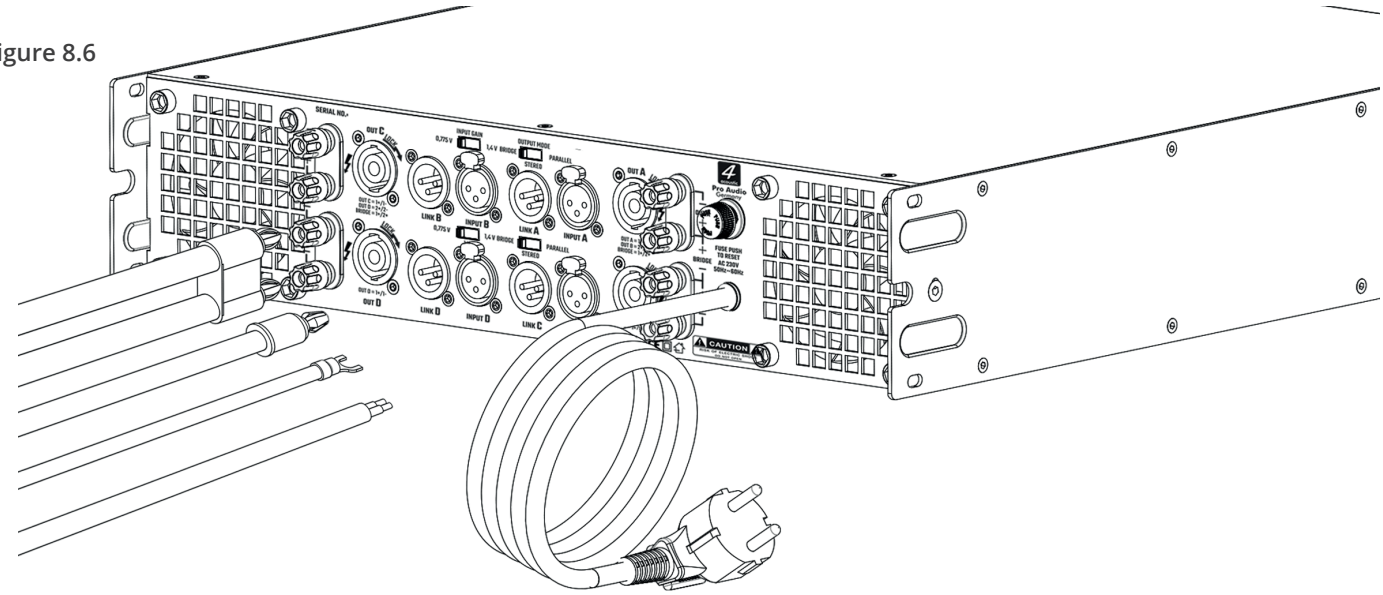


Figure 8.6



Select the appropriate size of wire based on the distance from amplifier to speaker.

Distance Wire Size:
up to 10 Meter 1,5mm²
up to 30 Meter 2,5mm²
over 30 Meter 4,0mm²

CAUTION: Never use shielded cable for speaker wiring.

9.1) Typically Stereo System Setup

Typical input and output wiring for stereo system setup. Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**

INPUTS: Connect analog input wiring for both channels.

OUTPUTS: Binding posts outputs figure 9.1
Connect Channel 1 loudspeaker's positive (+) lead to Channel 1 positive (red) terminal of amp; repeat for negative (–). Repeat Channel 2 wiring as for Channel 1.

Spkn outputs figure 9.2
To wire stereo speakers to the Spkn connectors plug the Channel 1 speaker into the Channel 1 Spkn connector, and plug the Channel 2 speaker into the Channel 2 Spkn

SWITCHES: Select the input sensitivity accordingly your audio source or mixer.
Select the Input Mode to Stereo.

Figure 9.1

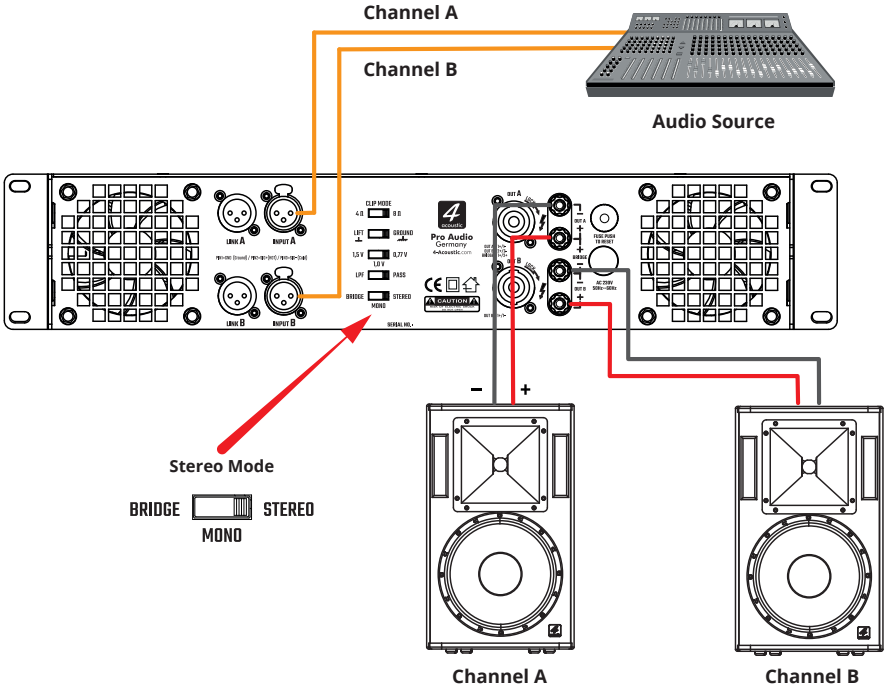
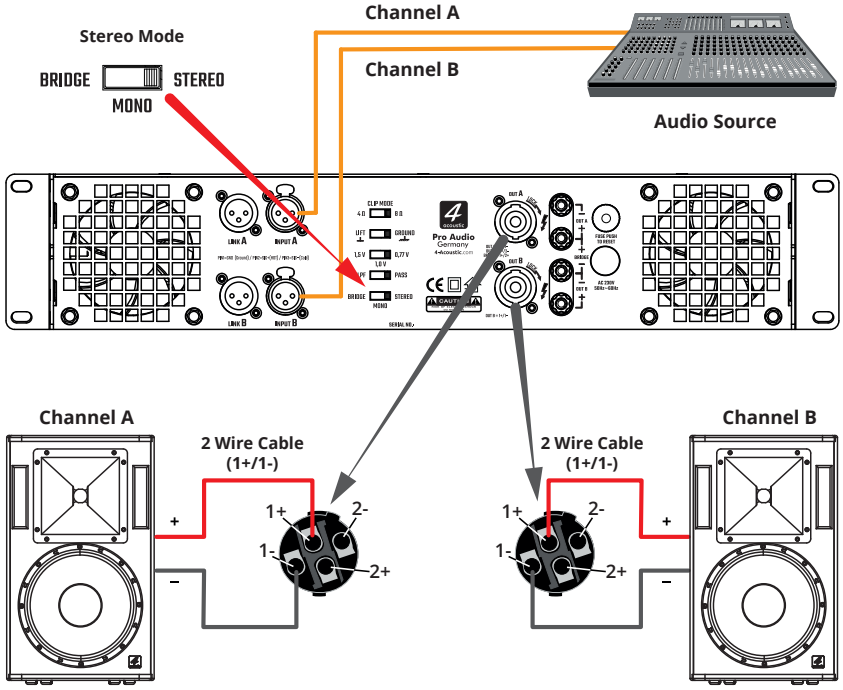


Figure 9.2



9.2) System Setup with 4 Wire Cable

Four wire system setups with subwoofer and Mid/High cabinet. Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**

INPUTS: **Connect analog input wiring for both channels.**
CHA Mid/High signal
CHB Sub signal

OUTPUTS: **Spkn output figure 9.3**
Plug the four-wire cable with Spkn plugs to the subwoofer input socket and to the CHA output socket of the amplifier.

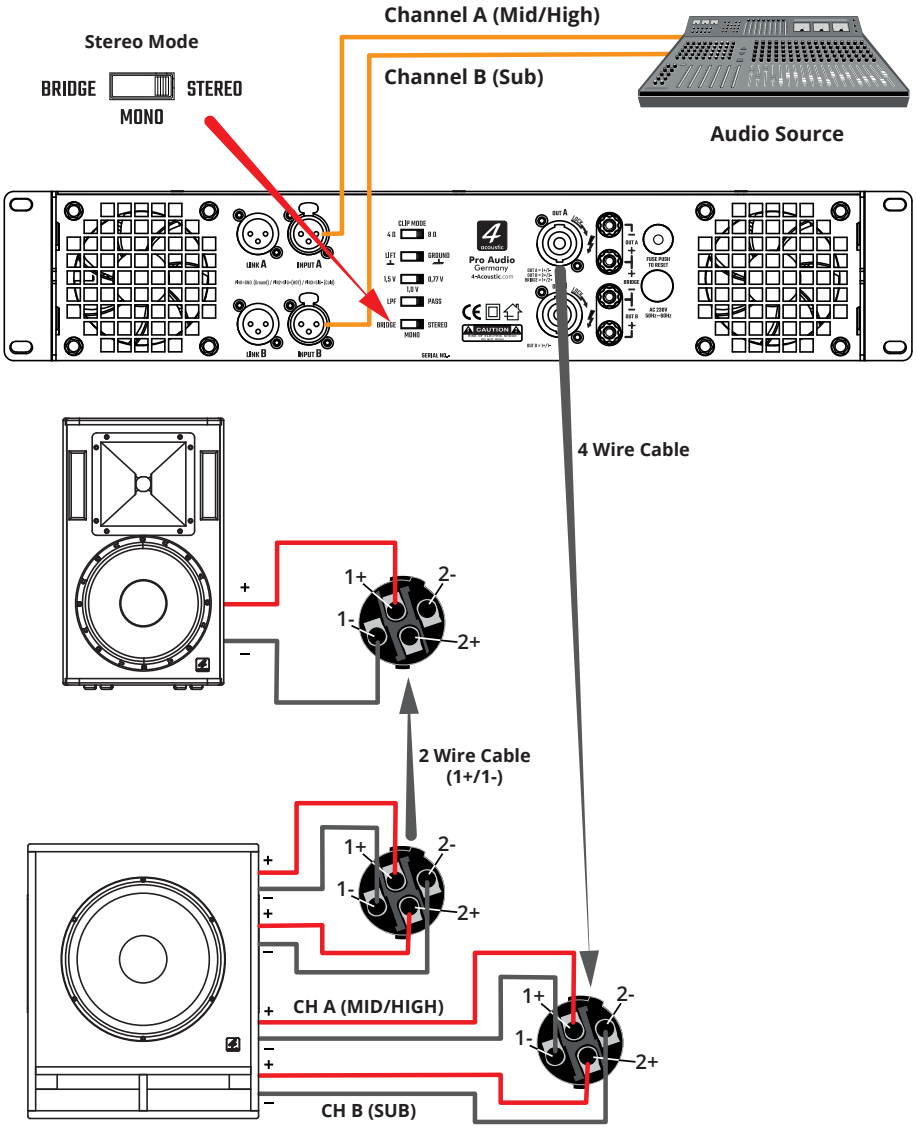
The wiring is: Mid/High 1+/1-
Sub 2+/2-

The woofer must be connected 2+/2-. A link Spkn socket in the sub must link the 1+/1- signal to the mid/high cabinet.

To connect the mid/high cabinet plug a two wire Spkn cable into the link socket of the subwoofer and the cabinet you want to connect. To wiring must be 1+/1-.

SWITCHES: **Select the input sensitivity accordingly your audio source or mixer.**
Select the Input Mode to Stereo.

Figure 9.3



9.3) Subwoofer Setup in Bridge Mode

Subwoofer setup in bridge mode. Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**
The lowest speaker impedance of each output channel in bridge mode is 4 Ohm!
The wiring is 1+/2+ at the amplifier and 1+/1- (or 2+/2-) at the subwoofer!

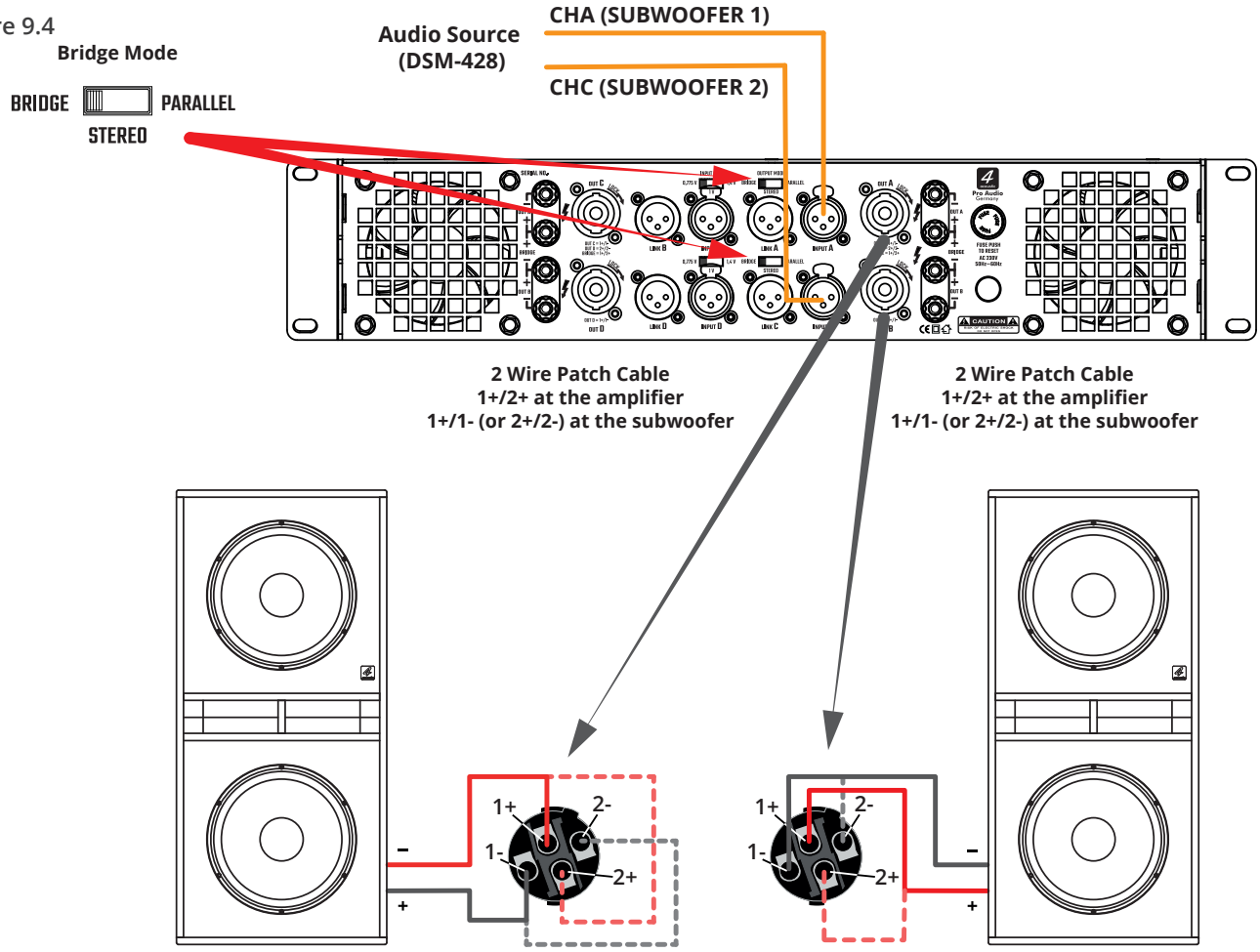
INPUTS: Connect analog input wiring for CHA and CHC
CHA Subwoofer 1 signal
CHB Subwoofer 2 signal

OUTPUTS: Spkn output figure 9.4
Plug the two wire patch cables with Spkn plugs to the subwoofer input socket and to the amplifier output sockets CHA and CHC.

The wiring is: Amplifier socket 1+/2+
Subwoofer socket 1+/1- or 2+/2-

SWITCHES: Select the input sensitivity accordingly your audio source or mixer.
Select the Input Mode CHA-CHB to Bridge
Select the Input Mode CHC-CHD to Bridge

Figure 9.4



9.4) Four Channel Sound System (SQ-1604, SQ-2404, SQ-3204)

Typically, four channel sound setups for monitoring, multi room usage, or line array cluster. Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

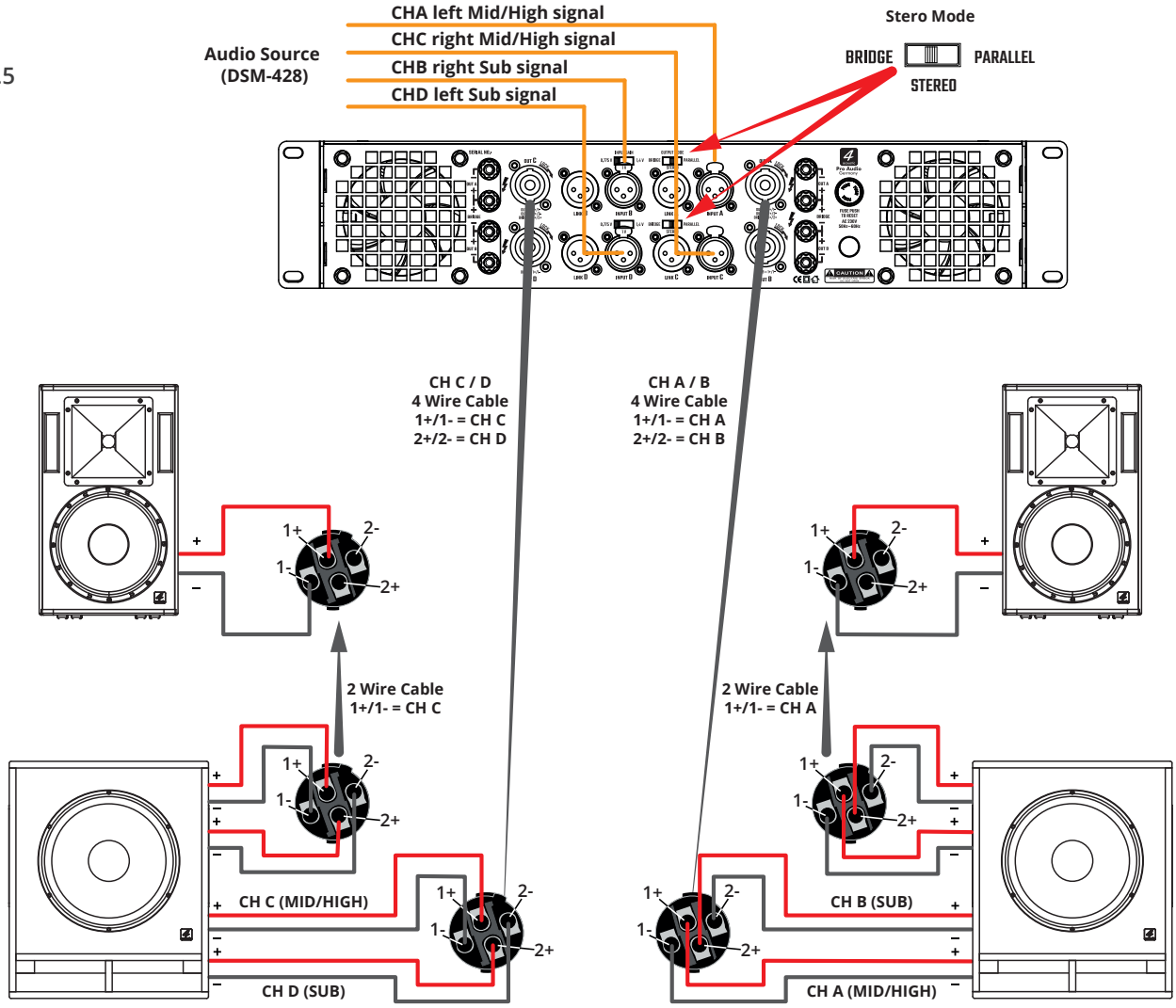
IMPORTANT: **Turn off the amplifier and unplug its power cord.**

INPUTS: Connect analog input wiring for all channels.

OUTPUTS: Spkn outputs figure 9.5
To wire the speakers connect two wire Spkn cables (1+/1-) from each speaker to the corresponding output socket of the amplifier.

SWITCHES: Select the input sensitivity accordingly your audio source or mixer.
Select the Input Mode to Stereo.

Figure 9.5



9.5) Two Channel Parallel Mode (SQ-1604, SQ-2404, SQ-3204)

Two Inputs in parallel mode. If you need the same signal on two or more outputs you can set the inputs to parallel mode. That means the input signal will be internal linked to the next input channel.
Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**

INPUTS: Connect analog input wiring for all signals you want to connect to the amplifier.

OUTPUTS: Spkn outputs figure 9.6
To wire the speakers connect two wire Spkn cables (1+/1-) from each speaker to the corresponding output socket of the amplifier.

SWITCHES: Select the input sensitivity accordingly your audio source or mixer.
Select the Input Channel you want link into parallel mode. In our sample CHA->CHB and CHC->CHD.

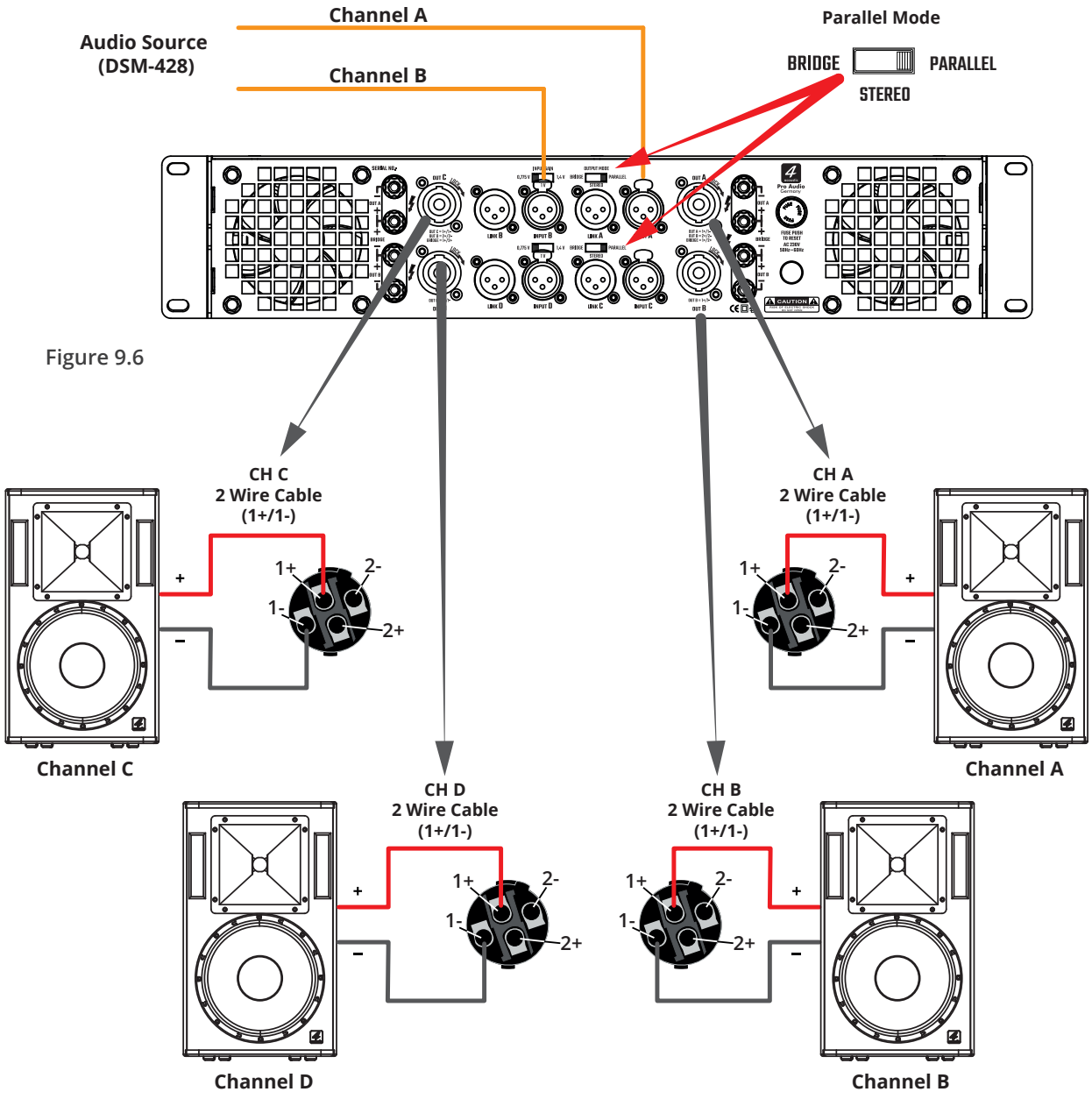


Figure 9.6

9.6) Stereo System Setup 2 subwoofer and 2 Mid/High cabinets (SQ-1604, SQ-2404, SQ-3204)

Stereo system setup with four channel amplifier and four wire cable. Two subwoofer and two Mid/High cabinets. Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**

INPUTS: **Connect analog input wiring for all channels.**
CHA left Mid/High signal — CHC right Mid/High signal
CHB left Sub signal — CHD right Sub signal

OUTPUTS: **Spkn output configuration figure 9.7**
Plug the four-wire Spkn cable to the two subwoofer input socket and to the CHA (CHC) output socket of the amplifier.

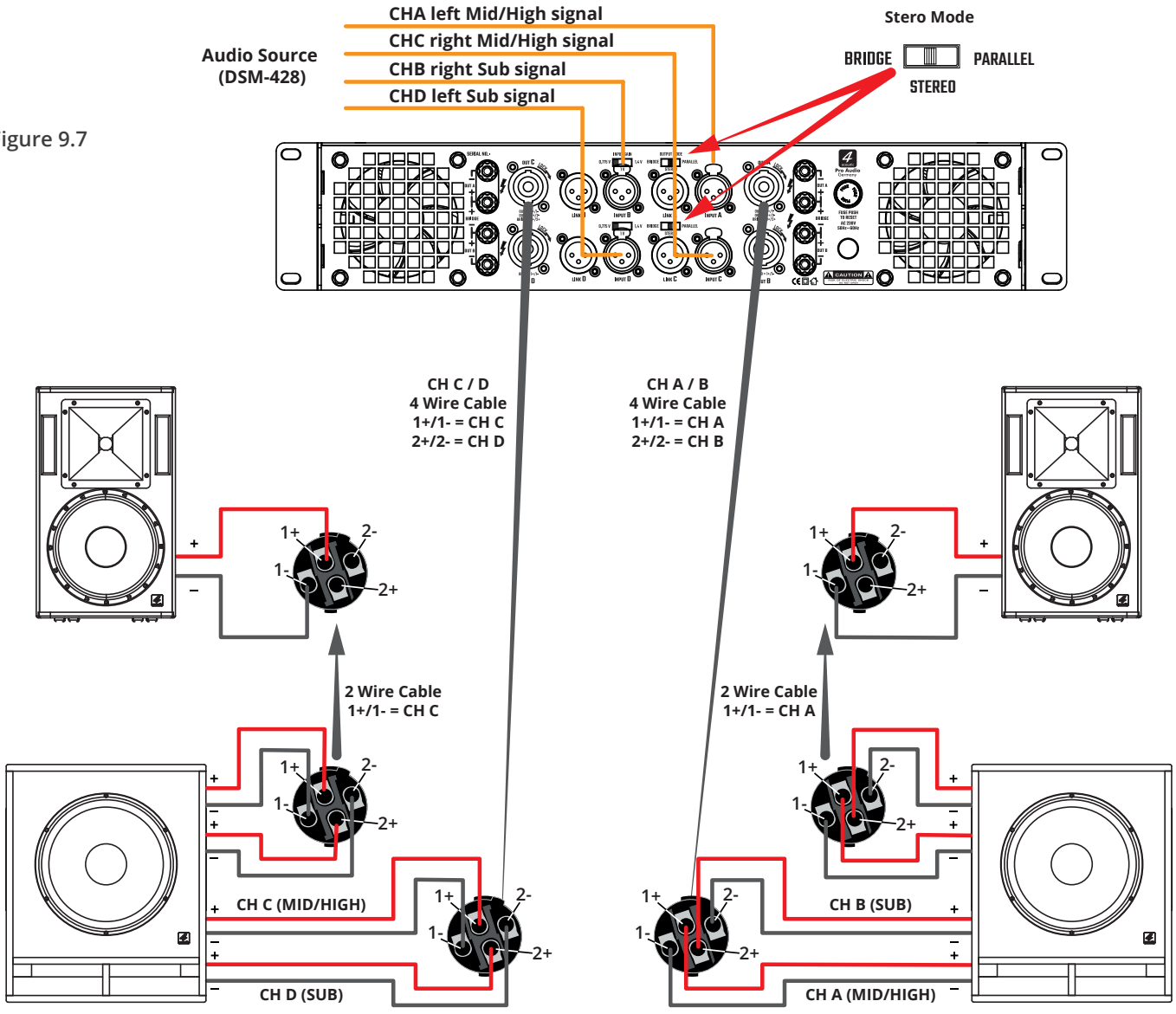
The wiring is: Mid/High 1+/1-
Sub 2+/2-

The woofer must be connected 2+/2-. The link Spkn socket in the sub must link the 1+/1- signal to the mid/high cabinet.

To connect the mid/high cabinet plug a two wire Spkn cable into the link socket of the subwoofer and the cabinet you want to connect. The wiring must be 1+/1-.

SWITCHES: **Select the input sensitivity accordingly your audio source or mixer.**
Select the Input Mode to Stereo.

Figure 9.7



9.7) Stereo Subwoofer Setup With Build In Crossover (SQ-1604, SQ-2404, SQ-3204)

Stereo system setup with two subwoofer using the build in LPF 100Hz/12dB Filter crossover.
Maintain proper polarity (+/–) on output and input connectors. Use Class 2 output wiring.

IMPORTANT: **Turn off the amplifier and unplug its power cord.**

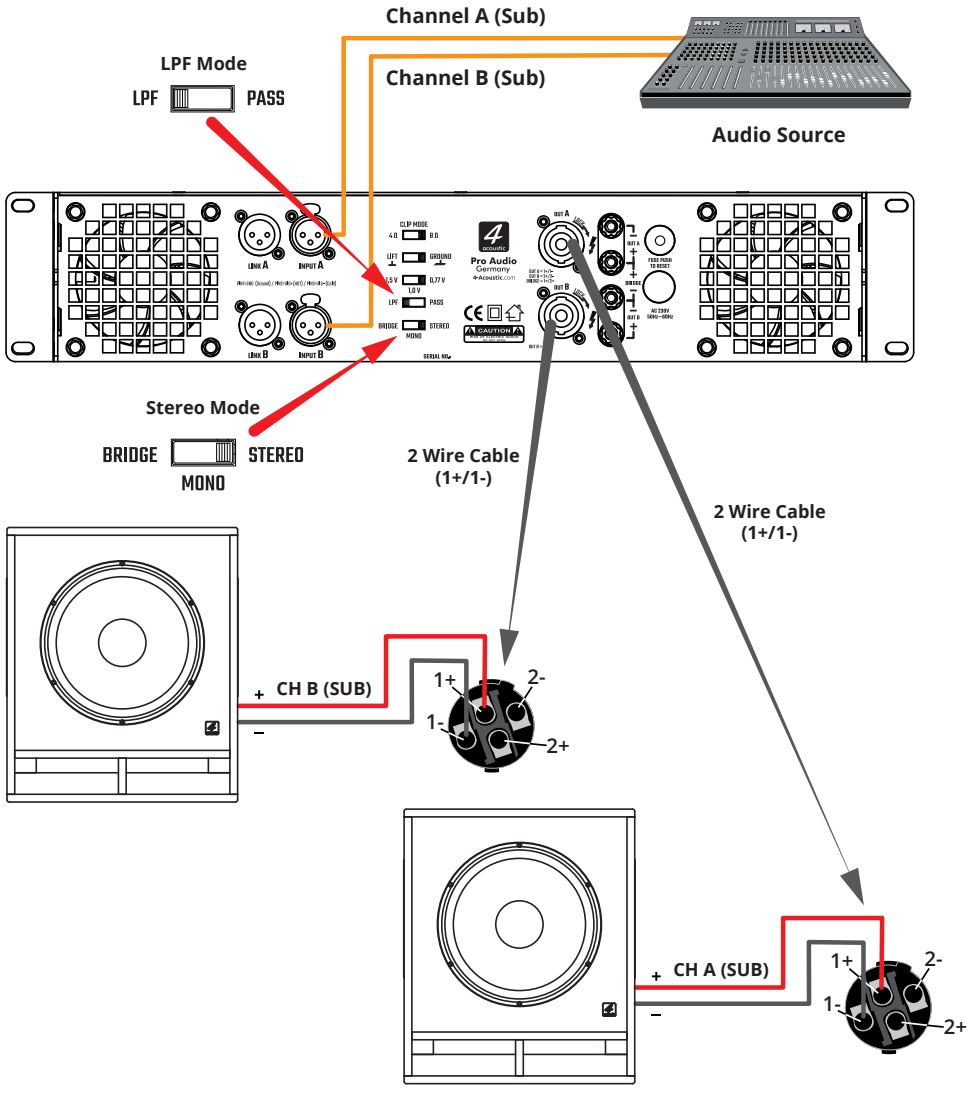
INPUTS: **Connect analog input wiring for all channels.**
CHA right Sub signal CHD left Sub signal

OUTPUTS: **Spkn output configuration figure 9.8**
Plug the two-wire Spkn cables to the two subwoofers input sockets and to the CHA (CHB) output socket of the amplifier.

The wiring is: 1+/1-

SWITCHES: **Select the input sensitivity accordingly your audio source or mixer.**
Select the Input Mode to Stereo.
Select the LPF Mode to LPF.

Figure 9.8



9.7) Setting System Gain Structure

For the best performance of your sound system, setup carefully the system`s gain structure. Gain structure is a term that refers to the various levels at each point of your sound system. The result of a good gain structure and a correct setup is a maximum signal headroom and a minimum of noise. In this operation manual we can show only a basic instruction how to setup a correct gain structure and how to get up the system running as quick as possible. If you want to go deeper into this issue there are lot of books to study.

Start setting up your system at the Mixer and work your way toward the amplifier. A system with the lowest noise floor and maximum overall gain will have most of its gain at the mixer.

Setup the mixer so that all sound sources are adjusted to deliver a signal without clipping, close to the 0db level and a fader position close to 0dB.

Adjust the master level of the mixer to 0dB fader position for the target maximum output level.

If there are components like DSP´s between the mixer and amplifier setup them up to reach the 0dB level at the target max. output level of the mixer.

For power amplifiers keep in mind that they are designed to produce a set amount of gain. The function of the input level potentiometer typically is to adjust the signal level coming into the amplifier's input stage. Even with the input level potentiometer turned down the amplifier can still reach full rated output power; it just takes more input drive level from your mixer to achieve it.

This issue is most misunderstood by many users.

To setup the right working level of the amplifier it is necessary to adjust the correct input sensitivity and correct level of the input potentiometer.

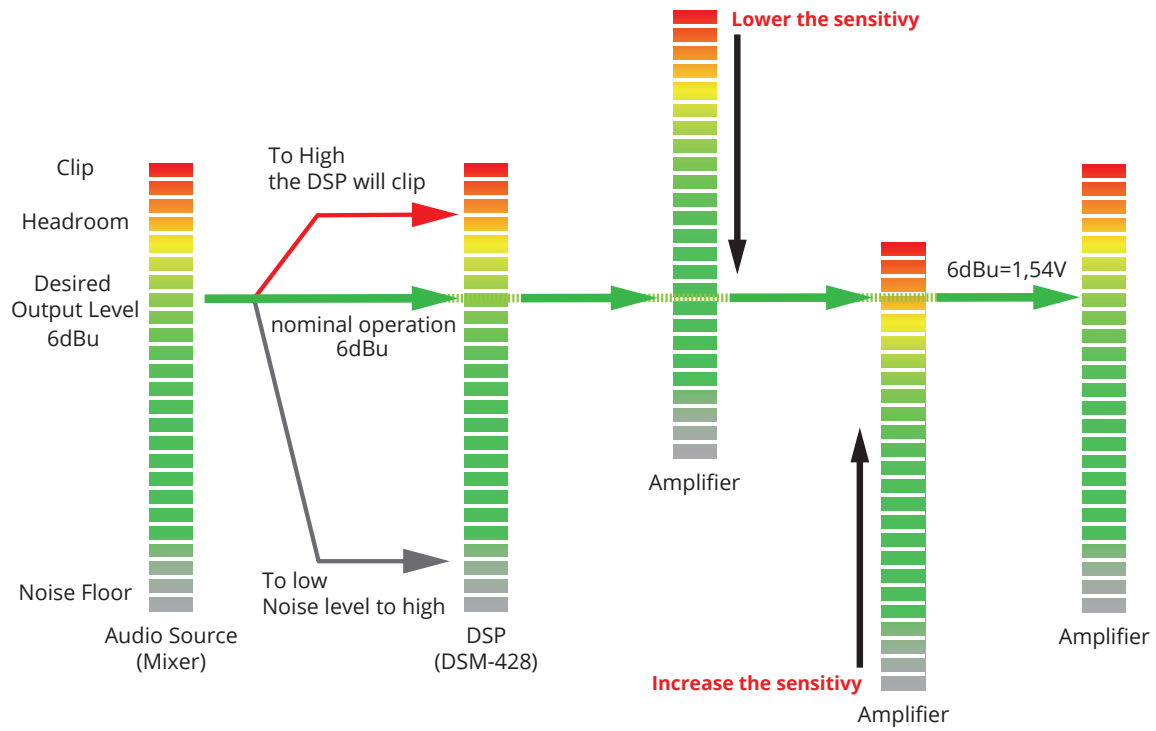
Please also refer to the user manual of the mixer or sound source to find out the output level at 0db. This can help to find the right setup.

Set the input sensitivity switches to 2,0 Volt and check if the amplifier can reach the maximum output level without clipping.
The mixer should supply a signal with 0dB output level which is the target maximum output level.

If the amplifier is clipping turn down the input level potentiometer.

If the maximum output level of the amplifier cannot be reached set the input sensitivity to 1,4V and try again.

Follow this procedure till the nominal operation level of the amplifier is found.



9.8) Bridge Mode Function

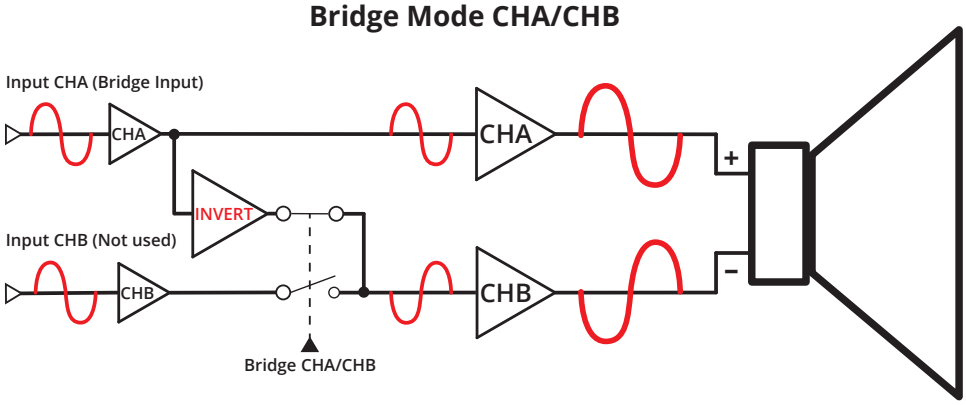
The SQ series allows to set CHA/CHB and/or CHC/CHD into bridge mode.

In this mode the input signal CHA and/or CHC will be internal inverted and used for the cooperating amplifier channel.

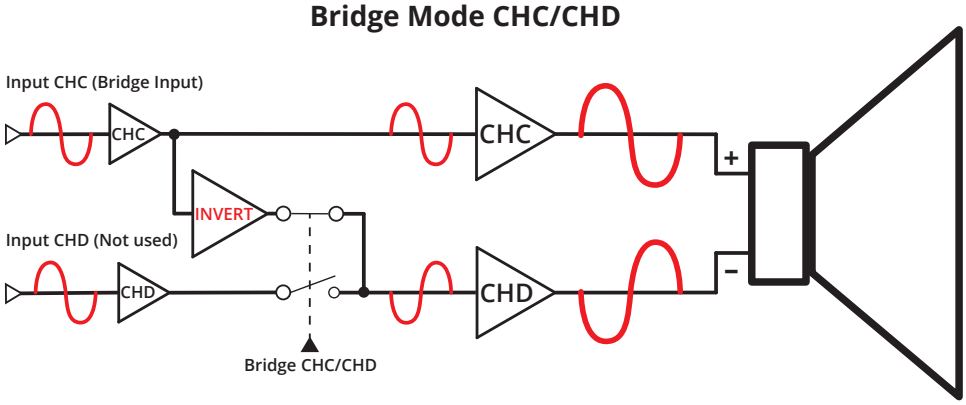
The result at the output is a signal with twice the voltage of a single output in stereo or parallel mode.

For the output power it means that double voltage could theoretically increase the output power 4 times. In real life some technical issues avoid that the output power increase that much. Please refer to the technical specification at page 25.
The disadvantage of the bridge mode is a lowest speaker impedance of 4 Ohm. The usage of 2 Ohm can cause unproper work and technical damage.

Bridge Mode CHA/CHB



Bridge Mode CHC/CHD



10.) Copyright

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11.) Technical Specification

Model Name	SQ-1200	SQ-1600	SQ-2000	SQ-2400
GS1 (EAN) CODE	4260318511940	4260318511957	4260318511964	4260318511971
System Type	2-Channel Class H	2-Channel Class H	2-Channel Class H	2-Channel Class H
Output Power all channels driven 20Hz-20kHz, 0.1%THD	2 x 1200W @ 2Ohm 2 x 900W @ 4Ohm 2 x 600W @ 8Ohm	2 x 1600W @ 2Ohm 2 x 1200W @ 4Ohm 2 x 800W @ 8Ohm	2 x 2000W @ 2Ohm 2 x 1500W @ 4Ohm 2 x 1000W @ 8Ohm	2 x 2400W @ 2Ohm 2 x 1800W @ 4Ohm 2 x 1200W @ 8Ohm
Output Power Bridge mode	1 x 2400W @ 4Ohm 1 x 1800W @ 8Ohm 1 x 1200W @16Ohm	1 x 3200W @ 4Ohm 1 x 2400W @ 8Ohm 1 x 1600W @16Ohm	1 x 4000W @ 4Ohm 1 x 3000W @ 8Ohm 1 x 2000W @16Ohm	1 x 4800W @ 4Ohm 1 x 3600W @ 8Ohm 1 x 2400W @16Ohm
THD+N	≤0.5% @ 8Ω 1kHz			
Slew Rate	>26V/µs			
Frequency Response	10Hz -20kHz / ±0.3dB @1Watt, 8Ohm			
Damping Factor	>2800@20Hz-100Hz			
Signal to Noise Ratio	>100dB 20Hz -20 kHz			
Channel Separation	>70dB Crosstalk@1kHz			
Voltage Gain	39dB (0,775V:69,5V)	40,3dB (0,775V:80,5V)	41,3dB (0,775V:89,5V)	42dB (0,775V:98V)
Input Sensitivity	selectable 0.775V/1V/1.5V			
Input Impedance	20k Ohm Balanced, 10k Ohm Unbalanced			
Front Control	Power switch, Gain control			
Rear Control	Sensitivity Switch, Input Mode Switch			
LED Indicators	Signal, Clip, Protect, Power, Bridge			
Input Connectors	XLR Active balanced (pin1 gnd / pin 2+ / pin3-)			
Output Connectors	2 x NL4 Spkn Sockets, 2 x Binding Posts			
Cooling	Low Noise Continuously Variable speed fan			
Protection	Full short circuit, Open circuit, thermal, Ultrasonic, RF Protection. Stable Into reactive or Mismatched loads			
Load Protection	On/Off muting, DC fault power, Supply shutdown			
Operating Voltage	230V (+/- 10%), 50-60Hz, USA Version 110V (+/- 10%), 50-60Hz			
Idle Power Consumption	< 38W	< 38W	< 40W	< 55W
Max. Power Consumption	< 980W	< 1400W	< 2100W	< 2800W
Fuse	T-15A	T-20A	T-20A	T-20A
Dimensions (h/w/d)	19"/2U 483W x 486D x 90H			
Net weight	24,5 kg	25,5kg	26,5kg	27,5kg

11.) Technical Specification

Model Name	SQ-1604	SQ-2404	SQ-3204
GS1 (EAN) CODE	4260318511988	4260318511995	4260318512015
System Type	4-Channel Class H Amplifier	4-Channel Class H Amplifier	4-Channel Class H Amplifier
Output Power all channels driven 20Hz-20kHz, 0.1%THD	4 x 600W @ 4Ohm 4 x 400W @ 8Ohm	4 x 900W @ 4Ohm 4 x 600W @ 8Ohm	4 x 1200W @ 4Ohm 4 x 800W @ 8Ohm
Output Power Bridge mode	2 x 1600W @ 4Ohm 2 x 1200W @ 8Ohm 2 x 800W @16Ohm	2 x 2400W @ 4Ohm 2 x 1800W @ 8Ohm 2 x 1200W @16Ohm	2 x 3200W @ 4Ohm 2 x 2400W @ 8Ohm 2 x 1600W @16Ohm
THD+N	≤0.5% @ 8Ω 20Hz-20kHz		
Slew Rate	>28V/µs		
Frequency Response	10Hz -20kHz / ±0.4dB @1Watt, 8Ohm		
Damping Factor	>3000@20Hz-100Hz		
Signal to Noise Ratio	>100dB 20Hz -20 kHz		
Channel Separation	>70dB Crosstalk@1kHz		
Voltage Gain	36dB (0,775V:49V)	39dB (0,775V:69,5V)	40,3dB (0,775V:80,5V)
Input Sensitivity	selectable 0.775V/1V/1.5V		
Input Impedance	20k Ohm Balanced, 10k Ohm Unbalanced		
Front Control	Power switch, Gain control		
Rear Control	Sensitivity Switch, Input Mode Switch		
LED Indicators	Signal, Clip, Protect, Power, Bridge		
Input Connectors	XLR Active balanced (pin1 gnd / pin 2+ / pin3-)		
Output Connectors	4 x NL4 Spkn Sockets, 4 x Binding Posts		
Cooling	Low Noise Continuously Variable speed fan		
Protection	Full short circuit, Open circuit, thermal, Ultrasonic, RF Protection. Stable Into reactive or Mismatched loads		
Load Protection	On/Off muting, DC fault power, Supply shutdown		
Operating Voltage	230V (+/- 10%), 50-60Hz, USA Version 110V (+/- 10%), 50-60Hz		
Idle Power Consumption	< 30W	< 30W	< 40W
Max. Power Consumption	< 1200W	< 2000W	< 3000W
Fuse	T-15A	T-20A	T-25A
Dimensions (h/w/d)	19“/2U 483W x 492D x 90H		
Net weight	24,5 kg	26,5 kg	28,5 kg

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