Owner's Manual

QA4150

QA4300

HPA

WARNING

1. Read these instructions - All the safety and operating instructions should be read before this product is operated.
2. Retain these instructions - The safety and operating instructions should be retained for future reference.
3. Heed all warnings - All warnings on the appliance and in the operating instructions should be adhered to.
4. Follow all instructions - All operating and use instructions should be followed.
5. Do not use this apparatus near water - The appliance should not be used near water or moisture - for example, in a wet basement or near a swimming pool, and the like.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacture'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 plug. A polarized plug has two blades with one wider than the ther. A grounding 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 the plugs, convenience receptacles, and at the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart or rack is used,use caution when moving the cart/apparatus combination to avoid injury from tip-over.

13. Unplug the apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified 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 has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Please keep the unit in a good ventilation environment.
16. WARNING:To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. The apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall not be placed on apparatus.
17. WARNING: The mains plug or appliance inlet is used as disconect device, the disconnect device shall remain readily operable.
18. Power Sources – This product should be operated only from the type of power source indicated on the rating label.If you are not sure of the type of power supply to your home, onsult your product dealer or local power company. For products intended to operate from battery power, or other sources, refer the perating instructions.
19. Safety Check – Upon completion of any service or repairs to this product, ask the service technician to perform safety checks to determine that the product is in proper operating condition.
20. Don't touch conductive parts of output terminals to prevent hazardous electrical shock. The external wiring connected to the terminals requires installation by an instructed person or the used of ready - made leads or cords.
21. This eguipment is for commercial & professional use only.
22. This product is in compliance with EU WEEE regulations. Disposal of end of life produc should not betreated as municipal waste. Please refer to your local regulations for instructions on proper disposal of this product.

23. To prevent hazardous electrical shock, do not touch the conductive parts of the output terminals.The external wiring connected to the terminals requires installation by an quallified technician or the use of ready made leads or cords.
24. Please locate the apparatus at places nearby power socket for quick power disconnection in emergency.

Protective earthing terminal. The apparatus should be connected to a mains socket outlet with a protective earthing connection.

This lightning flash is intended to alert the user to the presence of non-insulated "dangerous voltage" on the output terminals that may be of sufficient magnitude to constitute a risk of electric shock.The external wiring connected to the terminals requires installation by an instructed person or the used of ready-made leads or cords.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: To reduce the risk of electric shock, do not remove any cover. No user-serviceable parts inside. Refer servicing to qualified service personnel only.

The lightning flash with arrowhead symbol within the equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of suf ficient magnitude to constitute a risk of electric shock.

The exclamation point within the equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying this appliance.

CAUTION: To prevent electric shock, do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

Table of Contents

Introduction

QA4150 / QA4300
QUAD-CHANNEL POWER AMPLIFIER

Welcome.

Congratulation and thank you for the purchasing QA Series, a state-of-the-art heavy duty professional amplifier.
These amplifier are designed to provide a big impact in sound reproduction and to produce the best and highest quality audio at an affordable price. We wish you great enjoyment and satisfaction when using your amplifier, whether you are an installation, or reinforcement engineer.

Unpacking and Installation

Although it is neither complicated to install nor difficult to operate your amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its features and how to use them. Please take a great care in unpacking your set and do not discard the carton and other packing materials. They may be needed when moving your set and are required if it ever becomes necessary to return your set for service. Never place the unit near radiator, in front of heating vents, to direct sun light, in excessive humid or dusty location to avoid damages and to guaranty a long reliable use. Connect your unit with the system components according to the description on the following pages.

Features

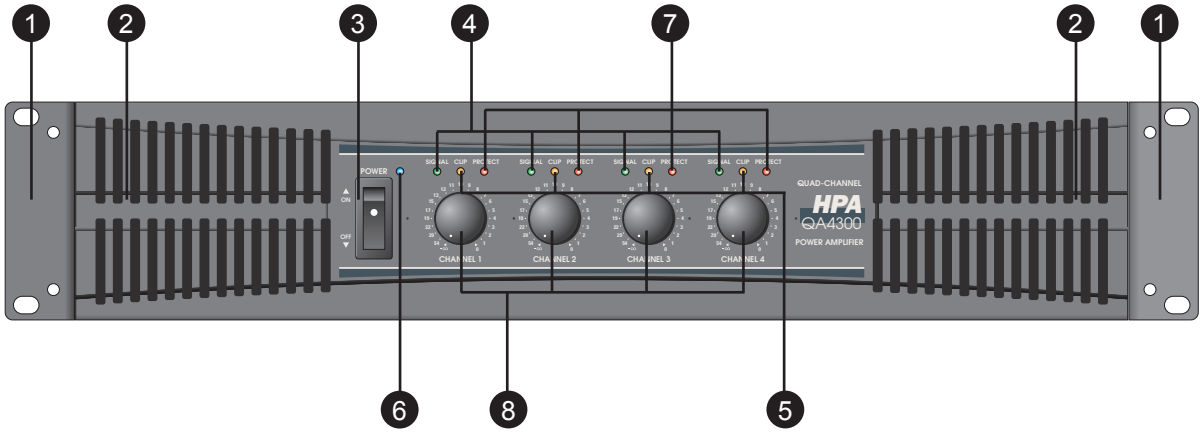
- HPA QA-Series amplifier delivers the following power ratings.

  QA4150 4 x 100 Watts at 8 ohm, 4 x 150 Watts at 4 ohm and 2 x 300 Watts at 8 ohm bridge

  QA4300 4 x 200 Watts at 8 ohm, 4 x 300 Watts at 4 ohm and 2 x 600 Watts at 8 ohm bridge

- 4-channel, 2-parallel or 2-bridged mono operating modes for flexible application 300 Watts for QA4150, 600 Watts for QA4300.
- Independent limiters for each channel reduce distortion.
- Independent input level controls for each channel allow precision adjustments.
- Precise signal and clip LED indicators to monitor performance, allow you to correct for overloading (clipping) condition.
- Twin-tunnel and four temperature-sensitivity forced-air cooling system to maintain a low temperature working condition.
- Balanced XLR or balanced 1/4-inch TRS Combination input connector for each channel.
- 5-way output binding posts or Speaker connectors enable secure operation.
- High-current toroidal transformer for absolute reliability.
- Independent DC and thermal overload protection on each channel automatically protects amplifier and speaker.
- The QA series can be mounted in any standard 19” rack.

Front Panel Controls



1. Rack Mounting Ears

Two front panel mounting holes are provided on each mounting ear.

2. Fan Vent

QA series amplifiers are cooled by two rear-mounted fans. Cool air is flowed through the front fan filters, reducing the temperature of the inside components while forcing the heat out the rear vents. Never block these vents and keep them clean at all time.

3. AC Power Switch

This switch controls the units main power.

4. Signal Indicators

These green and yellow LED will illuminate to indicate that a signal is present at the amplifier input, and that the signal is being amplified.

5. Clip Indicators

These red LED will illuminate at the clipping threshold. If it lights frequently, you maybe overloading the QA Series and a distorted signal is probably being output. Under heavy clipping activity lower the channel gain controls to reduce the risk of damage to your speakers and amplifier.

6. Power Indicators

These blue LED indicate that AC power is connected and the amplifier is turned on.

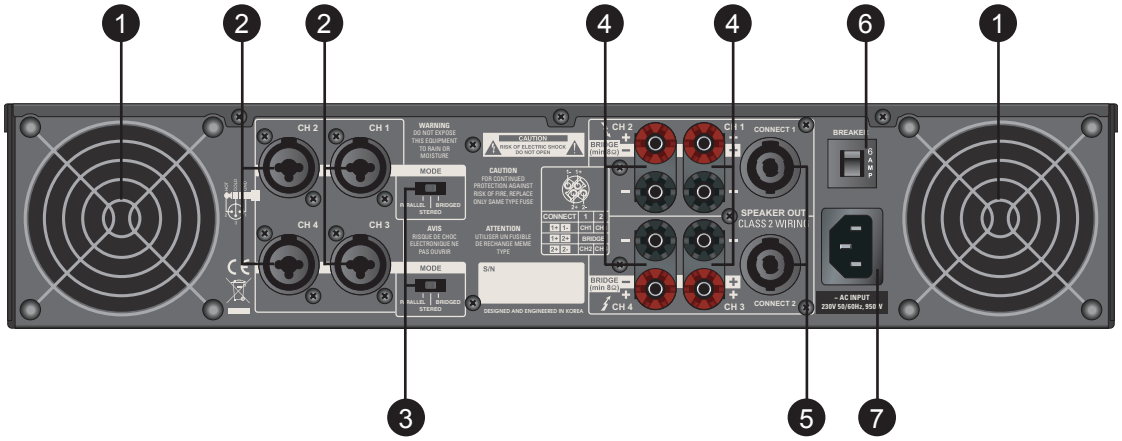
7. Protect Indicators

These red LED indicate that the channel is in Protect mode. When the channel goes into protect mode all output for that channel will turn off by output relay. The protect LED will light when overheating or other severe problem occur. This is to protect any speakers connected to the channel. These LED light for approximately five seconds whenever the QA Series is powered on and to fade slowly when the amplifier is powered off. It is normal.

8. Channel input level control

These four 21-position detented controls adjust input level for their respective amplifier channels. In Bridged Mono Mode, only channel 1.3 input level control are used to adjust signal level. In Parallel Mode, all four input level control are used to adjust signal level for their respective amplifier channels. At their fully counter-clockwise position, the signal is attenuated by more than 80dB. At their fully clockwise position, the signal is at unity gain. When 0 dBu of signal arrives at the input jacks and the Channel input level controls are set to their fully clockwise position, the QA Series delivers full power output.

Rear Panel Controls



1. Fan

This is a variable speed cooling fan. Cooling air enters the amplifier through the fan ports located on front of the amplifier chassis, Be sure not to block these ports when installing the amplifier or other associated equipment.

2. Input connectors

Connect the input source to these electronic balanced Combination connectors using either XLR or 1/4" TRS plugs. The 1/4" TRS and XLR plug configured as follows : Pin 2 (Tip) hot, Pin 3 (Ring) cold, and Pin 1 (Sleeve) ground. We recommend the use of balanced three-conductor cabling wherever possible. Unbalanced two-conductor 1/4" plugs can also be inserted into these inputs, but you will get better signal quality and less outside noise and hum if you use balanced lines. Stereo signal should be connected to all Channel 1~ 4 input jacks ; however ; when operating the QA Series in Bridged Mono or Parallel modes, use the Channel 1.3 input jack only.

3.Bridge / Stereo / Parallel switch

This switch changes the amplifier operating mode from either stereo or mono bridged or parallel. You can place this switch in "STEREO" position (center) for normal stereo operation. When placed in "PARALLEL" position, the channel 1 input signal is routed to the power amplifier of channel 1&2 and the channel 3 input signal is routed to the power amplifier of channel 3&4. When placed "BRIDGED" position, the channel 1 input signal only is routed to channel 1&2 again. In this mode the channel 2 input is ignored.(The channel 3 input signal only is routed to channel 3&4 in this mode the channel 4 input is ignored.)

4. 5-way Binding Post

Connect each channel of the QA Series to 4 ohms or 8 ohms loudspeakers.Two pairs of 5-way binding posts are provided for each channel, so that paralleling of speakers is possible.Connection to the binding posts can be made with bare wire, banana plugs, or spade lug terminations. Make connections to all 4 channel terminals for Stereo or Parallel Mode, or a single connection across the red terminals of Channel 1 and Channel 2 and channel 3 and channel 4 for Bridged Mono Mode.

5. Speakon output connectors

You can use these to connect each channel of QA Series to 8 ohms or 4 ohms loudspeakers. Using Speakon speaker cables, make connections to all 4 channel connectots for Stereo or Parallel Mode, or to the Bridged mode connector for Bridged Mono Mode.

6. Circuit breaker

The breaker acts in place of common discardable fuses. This circuit breaker will trip if there is a fault with the main voltage or if maximum output is exceeded. Simply depress the circuit breaker and power up the unit again.

7. AC input

IEC connector for AC power cable. Connect the supplied heavy-gauge 3-pin IEC power cable.

Protection

Every model in the QA Series incorporates protection features. The front panel Protection LED indicates the activity of the relay speaker connection circuitry in each channel. When the protection LED turn on, this circuitry is active, and all connected speakers are muted.

Initial power-up ; For approximately five seconds after initial power-up, the protection circuitry is activated and the speaker outputs are muted. If everything is operating normally, you will hear an audible click at the conclusion of this brief period, as the protection circuitry is deactivated and the QA Series begins delivering signal to connected speakers. It is normal for the Protection LED to fade gradually after the amplifier is powered off.

Thermal Protection ; Abnormally high heat sink temperatures will engage the Protect circuitry for the overheating channel only. An output relay disconnects the speakers until normal temperature range is restored. During this time, the Protect LED will light.
To guard against this problem, make sure the QA Series receives adequate ventilation on all sides and that both the front and rear panels are unobstructed. If the power transformer gets too hot, its thermal switch will disconnect all of the secondary power and disconnect both channel outputs.

Short circuit ; If output is shorted due to faulty wiring, the thermal circuitry will automatically protect the amplifier. If this will occur, the load will be disconnected by thermal protection circuitry (also output relay opens).

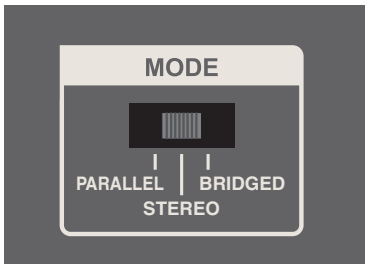
DC Voltage Protection ; If an amplifier channel detects DC voltage at speaker output, the output relay immediately open to prevent speaker damage.

Current limiting Protection ; At the amplifier's full power limit, or clipping point, the limiter circuitry will be activated. This is indicated by illumination of the Clip LED. The channel gain is automatically reduced, protecting the speakers from the high power. This circuitry may be activated by uncontrolled feedback, oscillations, improper equipment gain setting. And this circuitry is virtually transparent in operation and full signal bandwidth is maintained.

Any time the Protection LED lights up (except for initial power-up during approximately five seconds), there is reason to be concerned. If this occurs, turn the amplifier off immediately and check carefully all wiring and external equipments in order to locate and correct the condition.

Setup

Mode Select



Stereo Mode

In this mode, each channels operate independently (typical quard amplifier). Channel 1 input signal feeds channel 1 power amp, and channel 2 input signal feeds channel 2 power amp (channel 3 and 4 are operate same as channel 1 and 2). In this mode, the minimum speaker impedance per channel is 4

Parallel Mode

In this mode, channels 1 and 2 are operate two mono amplifier. In this mode channel 1 input signal feeds channel 1 and channel 2 power amp, the minimum speaker impedance per channel is 4 . Also, channel 3 and 4 are operate same as channel 1 and 2.

Bridged Mono Mode

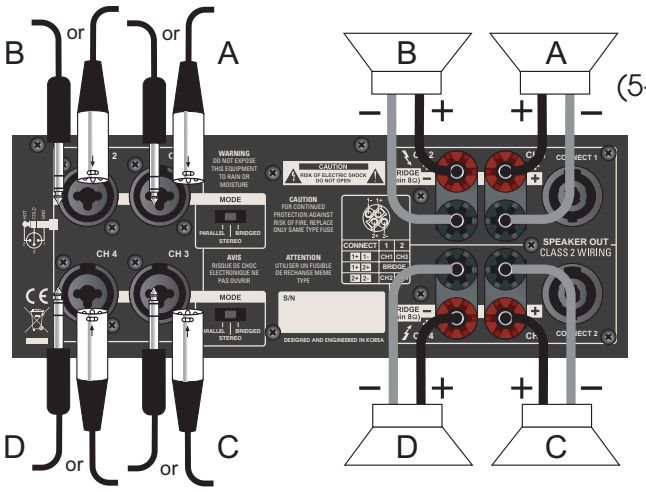
In this mode, channels 1,2 or 3,4 are bridged together and work as one mono amplifier. In this mode, the minimum speaker impedance is 8 (Caution: In this mode, channel 2 and 4 volume is set maximum position (0)).

Note : *Bridged mono mode is to be used only when the QA Series is connected to a 8 ohms speaker load. Use of Bridged mode with speaker loads of 8 ohms or less can result in severe damage to the unit due to excessive heat and current limiting.*

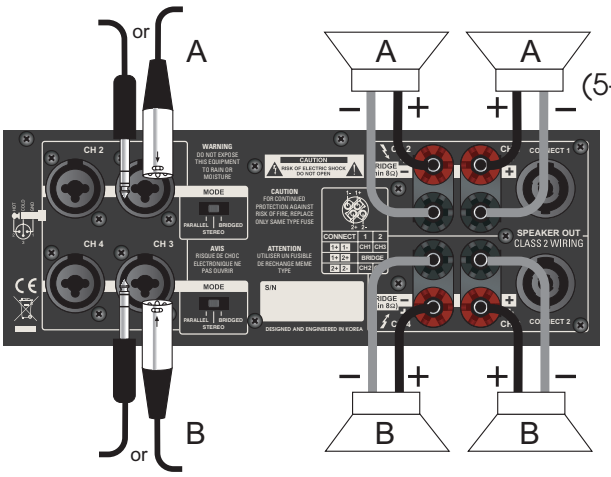
Use extreme caution when operating the amplifier in Bridged Mono Mode. Never ground either side of the speaker cable when the amplifier is in Bridged Mono Mode ; the speaker load must " float " away from the amplifier chassis.

Connections

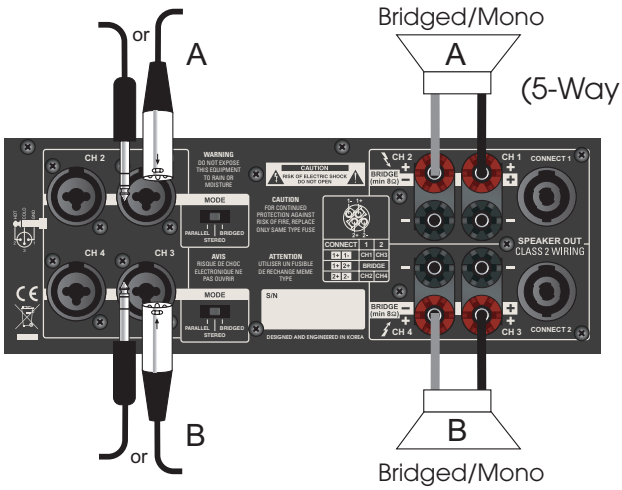
Stereo Mode



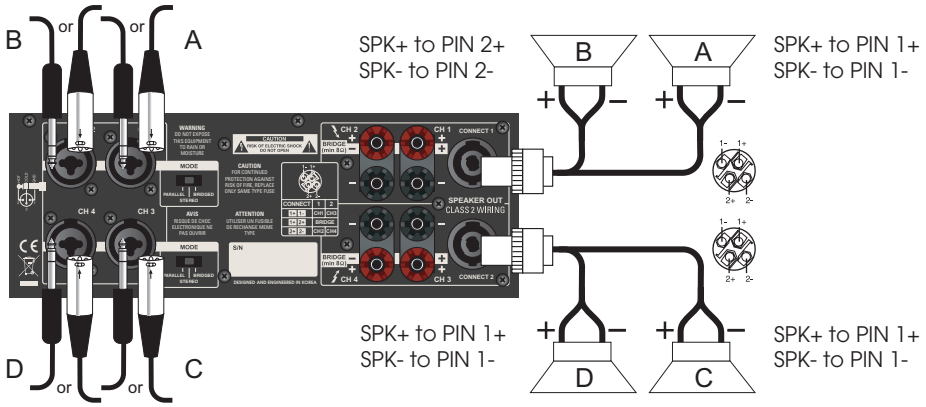
Parallel Mode



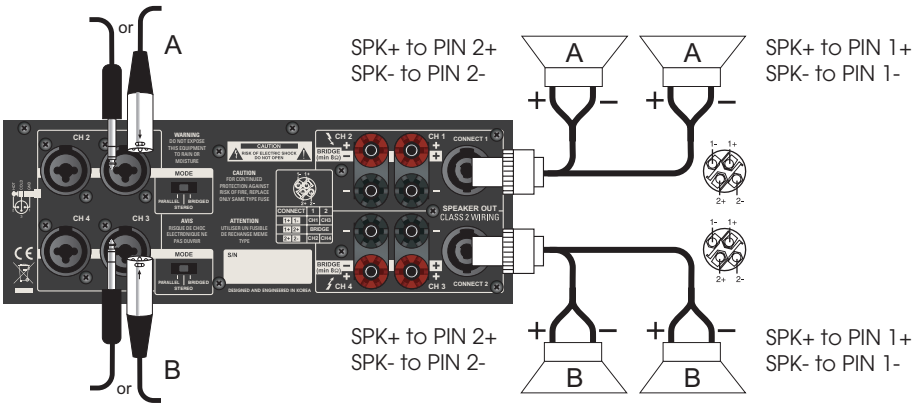
Bridged Mono Mode



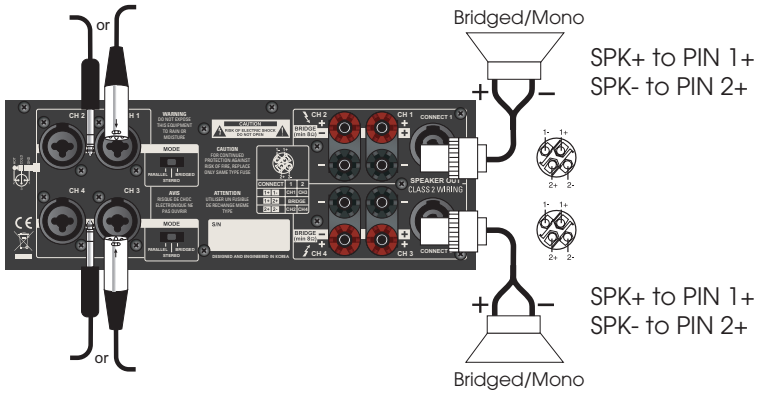
Stereo Mode



Parallel Mode



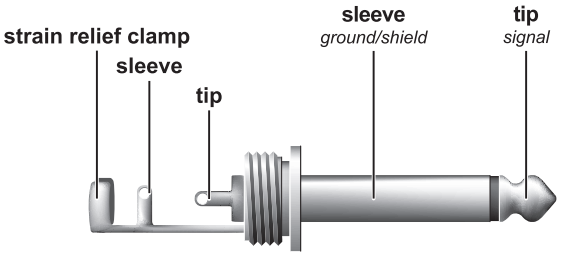
Bridged Mono Mode



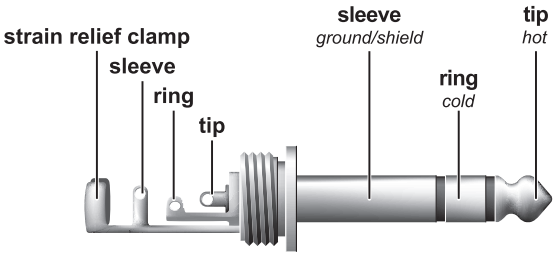
Wiring

These are several ways to interface the QA series amplifier to support a variety of applications. The QA series features balanced inputs and outputs, so connecting balanced and unbalanced signals is possibles.

Unbalances 1/4" Connector

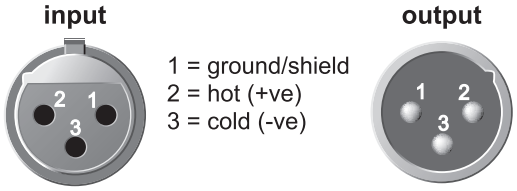


Balances TRS 1/4" Connector



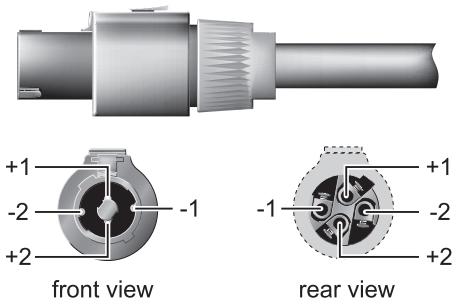
For connection of balanced and unbalanced plugs, ring and sleeve have to be bridged at the stereo plug.

XLR Balanced Wiring Guide



For unbalanced use pin 1 and pin 3 have to be bridged

Speakon® Output Connector



Specifications

	QA 4150	QA 4300
Rated Output Power	Stereo Four Channel Driven	
8 ohms	100 W	200 W
4 ohms	150 W	300 W
Rated Output Power	Bridged Mono	
8 ohms	300 W	600 W
Signal to Noise Ratio (20 Hz ~ 20k Hz)	100dB	100dB
Distortion (SMPTE-IM)	0.05%	0.05%
Input sensitivity @8 ohms	4dBu	4dBu
Voltage Gain	27dB	30dB
Output Circuitry	AB	AB
Current Consumption	120Vac / 240Vac	
@ 1/8 power @4 ohms	5.0A / 2.4A	9.5A / 4.6A
@ 1/3 power @4 ohms	7.5A / 4.0A	14.5A / 7.4A
@ Rated power @4 ohms	11.0A / 5.8A	1.5A / 11.2A
Distortion		
20 Hz-20k Hz Half Power	0.01%	0.01%
1k Hz Rated Power	0.1%	0.1%
Frequency Response	0/-0.5dB ; 20Hz-20KHz, 0/-3dB ; 5Hz-60KHz	
Damping Factor (400 Hz)	200	200
Input Impedance	15Kohm Unbalanced, 30Kohm Balanced	
Input Clipping	22dBu (10Vrms)	
Cooling	Continuously variable speed, Front to rear	
Connectors (each)		
Input	Active balanced combo (XLR and 1/4” TRS common use)	
Output	5-way Binding post and Speakon	
Control		
Front	AC power switch, Channel 1 & 2 & 3 & 4 volume	
Rear	Mode selector switch	
Indicators	Active(blue), Protection(red), Clip(yellow), Signal (green)	
Protection	Short circuit, Thermal, Current limit, Current inrush, RF protection, Turn on / Turn off muting	
Power requirements	100, 120/240Vac, 50/60Hz	
Dimensions (W × H × D)	19”(482mm) × 3.5”(88mm) × 16.5”(420 mm)	
Net Weight	40 lb (20.9 kg)	51.1 lb (23.2 kg)

Necessary modifications are carried out without notice.

HPA