OWNER'S MANUAL
MANUALE UTENTE

QPS 10K
QPS 6.0K

FOUR-CHANNEL POWER AMPLIFIERS

CONTENTS

SAFETY PRECAUTIONS AND GENERAL INFORMATION

Symbols used in this document give notice of important operating instructions and warnings which must be strictly followed.

	**CAUTION**	Important operating instructions: explains hazards that could damage a product, including data loss
	**WARNING**	Important advice concerning the use of dangerous voltages and the potential risk of electric shock, personal injury or death.
	**IMPORTANT NOTES**	Helpful and relevant information about the topic
	**SUPPORTS, TROLLEYS AND CARTS**	Information about the use of supports, trolleys and carts. Reminds to move with extreme caution and never tilt.
	**WASTE DISPOSAL**	This symbol indicates that this product should not be disposed with your household waste, according to the WEEE directive (2012/19/EU) and your national law.

IMPORTANT NOTES

This manual contains important information about the correct and safe use of the device. Before connecting and using this product, please read this instruction manual carefully and keep it on hand for future reference. The manual is to be considered an integral part of this product and must accompany it when it changes ownership as a reference for correct installation and use as well as for the safety precautions. RCF S.p.A. will not assume any responsibility for the incorrect installation and / or use of this product.

SAFETY PRECAUTIONS

1. All the precautions, in particular the safety ones, must be read with special attention, as they provide important information.

2. Power supply from mains

a. The mains voltage is sufficiently high to involve a risk of electrocution; install and connect this product before plugging it in.

b. Before powering up, make sure that all the connections have been made correctly and the voltage of your mains corresponds to the voltage shown on the rating plate on the unit, if not, please contact your RCF dealer.

c. The metallic parts of the unit are earthed through the power cable. An apparatus with CLASS I construction shall be connected to a mains socket outlet with a protective earthing connection.

d. Protect the power cable from damage; make sure it is positioned in a way that it cannot be stepped on or crushed by objects.

e. To prevent the risk of electric shock, never open this product: there are no parts inside that the user needs to access.

f. Be careful: in the case of a product supplied by manufacturer only with POWERCON connectors and without a power cord, jointly to POWERCON connectors type NAC3FCA (power-in) and NAC3FCB (power-out), the following power cords compliant to national standard shall be used:

- EU: cord type H05VV-F 3G 3x2.5 mm2 - Standard IEC 60227-1
- JP: cord type VCTF 3x2 mm2; 15Amp/120V~ - Standard JIS C3306

- US: cord type SJT/SJTO 3x14 AWG; 15Amp/125V~ - Standard ANSI/UL 62

3. Make sure that no objects or liquids can get into this product, as this may cause a short circuit. This apparatus shall not be exposed to dripping or splashing. No objects filled with liquid, such as vases, shall be placed on this apparatus. No naked sources (such as lighted candles) should be placed on this apparatus.

4. Never attempt to carry out any operations, modifications or repairs that are not expressly described in this manual. Contact your authorized service centre or qualified personnel should any of the following occur:

- The product does not function (or functions in an anomalous way).
- The power cable has been damaged.
- Objects or liquids have got in the unit.
- The product has been subject to a heavy impact.

5. If this product is not used for a long period, disconnect the power cable.

6. If this product begins emitting any strange odours or smoke, switch it off immediately and disconnect the power cable.

7. Do not connect this product to any equipment or accessories not foreseen.

For suspended installation, only use the dedicated anchoring points and do not try to hang this product by using elements that are unsuitable or not specific for this purpose. Also check the suitability of the support surface to which the product is anchored (wall, ceiling, structure, etc.), and the components used for attachment (screw anchors, screws, brackets not supplied by RCF etc.), which must guarantee the security of the system / installation over time, also considering, for example, the mechanical vibrations normally generated by transducers. To prevent the risk of falling equipment, do not stack multiple units of this product unless this possibility is specified in the user manual.

8. RCF S.p.A. strongly recommends this product is only installed by professional qualified installers (or specialised firms) who can ensure correct installation and certify it according to the regulations in force. The entire audio system must comply with the current standards and regulations regarding electrical systems.

9. Supports, trolleys and carts.

The equipment should be only used on supports, trolleys and carts, where necessary, that are recommended by the manufacturer. The equipment / support / trolley / cart assembly must be moved with extreme caution. Sudden stops, excessive pushing force and uneven floors may cause the assembly to overturn. Never tilt the assembly.

10. There are numerous mechanical and electrical factors to be considered when installing a professional audio system (in addition to those which are strictly acoustic, such as sound pressure, angles of coverage, frequency response, etc.).

11. Hearing loss. Exposure to high sound levels can cause permanent hearing loss. The acoustic pressure level that leads to hearing loss is different from person to person and depends on the duration of exposure. To prevent potentially dangerous exposure to high levels of acoustic pressure, anyone who is exposed to these levels should use adequate protection devices. When a transducer capable of producing high sound levels is being used, it is therefore necessary to wear ear plugs or protective earphones. See the manual technical specifications to know the maximum sound pressure level.

OPERATING PRECAUTIONS

- Place this product far from any heat sources and always ensure an adequate air circulation around it.
- Do not overload this product for a long time.
- Never force the control elements (keys, knobs, etc.).
- Do not use solvents, alcohol, benzene or other volatile substances for cleaning the external parts of this product.

IMPORTANT NOTES

To prevent the occurrence of noise on line signal cables, use screened cables only and avoid putting them close to:

- **Equipment that produces high-intensity electromagnetic fields**
- **Power cables**
- **Loudspeakers lines**

WARNING! CAUTION! To prevent the risk of fire or electric shock, never expose this product to rain or humidity.

WARNING! To prevent electric shock hazard, do not connect to mains power supply while grille is removed.

WARNING! to reduce the risk of electric shock, do not disassemble this product unless you are qualified. Refer servicing to qualified service personnel.

CORRECT DISPOSAL OF THIS PRODUCT

This product should be handed over to an authorized collection site for recycling waste electrical and electronic equipment (EEE). Improper handling of this type of waste could have a possible negative impact on the environment and human health due to potentially hazardous substances that are generally associated with EEE. At the same time, your cooperation in the correct disposal of this product will contribute to the effective usage of natural resources. For more information about where you can drop off your waste equipment for recycling, please contact your local city office, waste authority or your household waste disposal service.

CARE AND MAINTENANCE

To ensure a long-life service, this product should be used following these advices:

- If the product is intended to be set up outdoors, be sure it is under cover and protected to rain and moisture.
- If the product needs to be used in a cold environment, slowly warm up the voice coils by sending a low-level signal for about 15 minutes before sending high-power signals.
- Always use a dry cloth to clean the exterior surfaces of the product and always do it when the power is turned off.

CAUTION: to avoid damaging the exterior finishes do not use cleaning solvents or abrasives.

WARNING! CAUTION! For powered products, do cleaning only when the power is turned off.

FCC NOTES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency

energy, and if it is not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Modifications: Any modifications made to this device that are not approved by RCF may void the authority granted to the user by the FCC to operate this equipment.

RCF S.p.A. thanks you for purchasing this product, which has been designed to guarantee reliability and high performance.

DESCRIPTION

QPS Series offers a range of four-channels professional amplifiers that combines high quality performance and reliability with the latest power amplifications technologies. This high value design offers, in compact 2 rack unit space, the sound quality and the durability of class HD amplifiers with the innovation of the latest power devices available:

- QPS 10K can deliver up to 4 x 2500 W @ 2 ohm;
- QPS 6.0K can deliver up to 4 x 1500 W @ 2 ohm.

Thanks to its high efficiency heat sinks and variable speed fans, QPS series amplifiers can withstand the hardest heat conditions ensuring great reliability.

MAIN FEATURES

- Independent gain control
- Signal / clip and faults indicators
- Channels A and C XLR output link
- Mono and bridge mode
- SPEAKON output connectors
- Extensive protective circuits

UNPACKING AND INSTALLATION

Check the carton box and its contents and if there is any sign of damage (should the amplifier be damaged, immediately inform your local distributor / dealer and the forwarder). It is always advisable to keep the packing materials, even if the amplifier has arrived in good condition. Input and output cables are not included.

Each amplifier needs 2 units of a standard 19" rack cabinet.

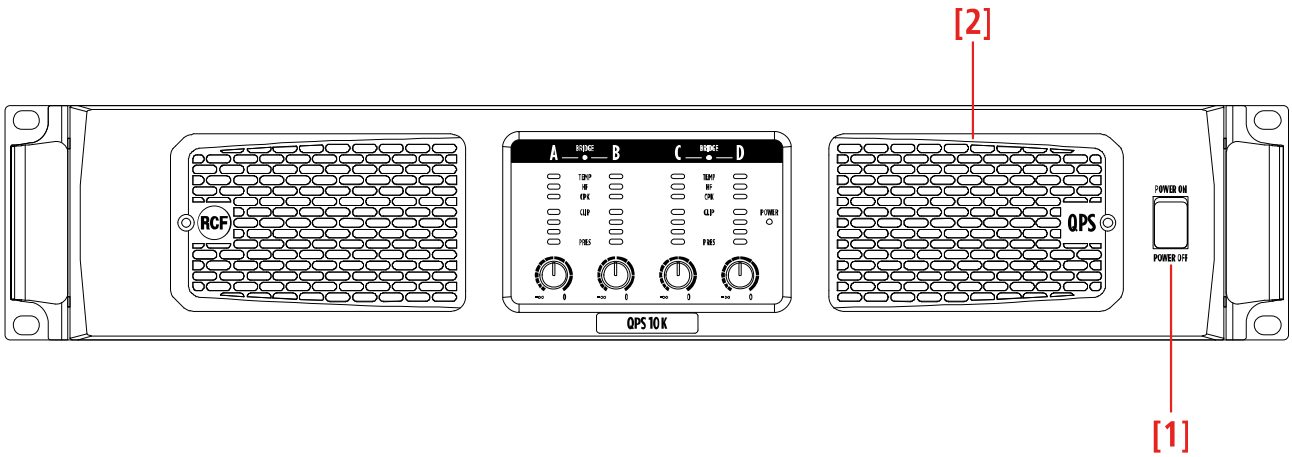
Four holes for rack mounting are on the front panel ears.

Rear mounting ears give additional support.

AMPLIFIERS SHOULD NOT BE INSTALLED IN A PLACE WITH:

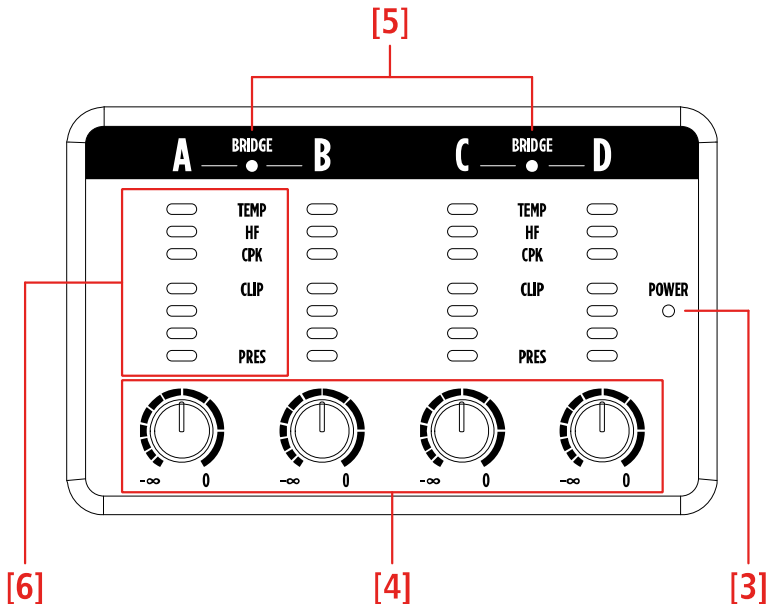
- too high temperature, dust or excessive humidity;
- exhaust air ventilators;
- permanent vibrations;
- high-intensity electromagnetic fields (due to transformers, transmitters, etc.).

FRONT PANEL



[1] POWER SWITCH. Before switching the amplifier on, check all cables and turn fully counterclockwise all the four channel level controls **[4]**.

[2] Removable grill with dust protection foam.



[3] POWER LED. GREEN. When lit, the amplifier is switched on.

[4] GAIN CONTROLS (for each channel), to adjust the output level of the respective amplifier channels. Turn clockwise to increase the output level (0 dB = max. level), turn counterclockwise to decrease. Set the control of an unused channel fully counterclockwise.

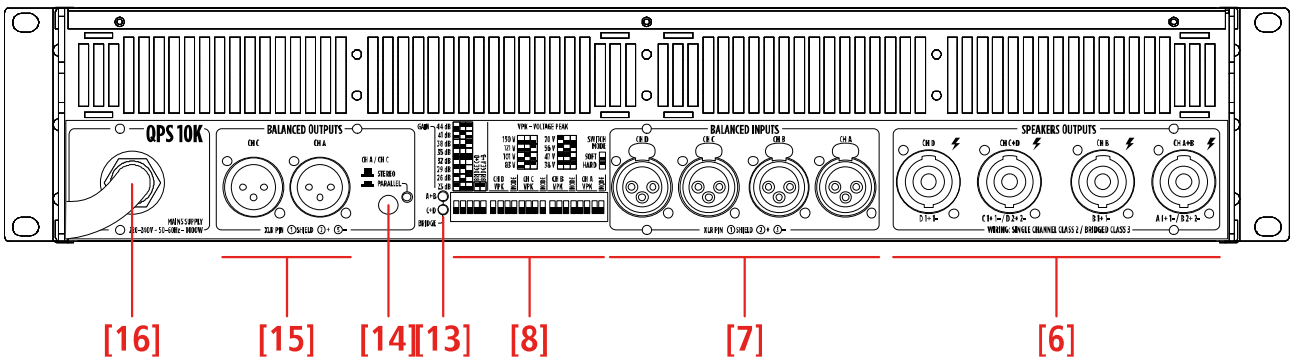
i If channels A and B are bridged, use the channel A control only. If channels C and D are bridged, use the channel C control only.

[5] BRIDGE LEDs. YELLOW. When lit, they indicate channels A and B, or C and D are bridged. The same information is available also on the rear panel.

[6] LEDs BAR (for each channel).

PRES	GREEN. When lit, it indicates the signal presence at the respective input. Signal level is represented by the first three leds in the lower part of the bar.
CLIP	YELLOW. It blinks when the signal level reaches the clipping point, causing the limiter intervention on the respective channel. If it is steady lit, the input signal level is excessive and should be reduced.
CPK	RED. If steady lit: load having a too low impedance / short circuit detected. The respective output is muted.
HF	RED. If steady lit: high frequency protection insertion. The respective output is muted.
TEMP	RED. When lit, it indicates the internal protection intervention due to thermal drift. The respective channel is muted.

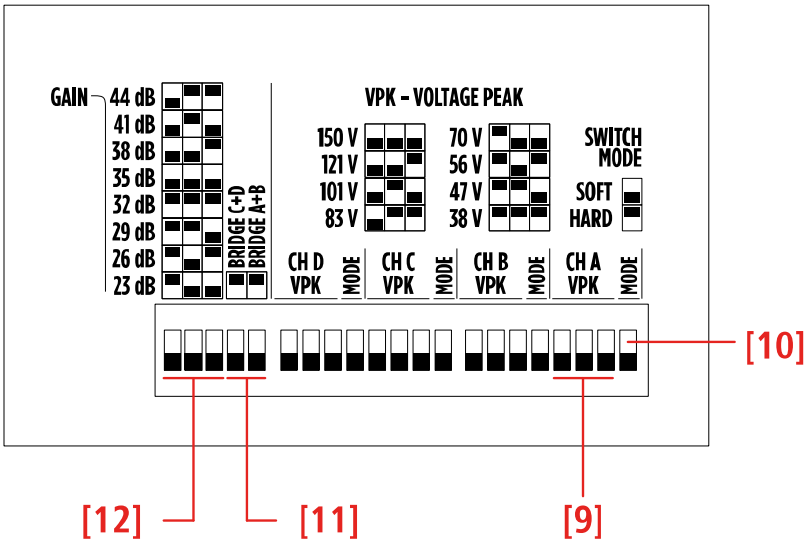
REAR PANEL



[6] CHANNELS SPEAKERS OUTPUTS. SPEAKON connector. See 'Operation modes' and 'SPEAKON connector wiring' manual sections.

[7] CHANNELS BALANCED AUDIO INPUT. Female XLR connector.

[8] DIP-SWITCH SETTINGS AREA.



[9] VPK - VOLTAGE PEAK LIMITER setting (for each channel). Three dip-switches allow to set the maximum output voltage peak for each channel among eight values. it makes possible to reduce the channel power according to connected speakers. Max power value can be calculated using the formula:

$$P\,(W) = \frac{VPK\,(V)^2}{1.41 \times load\,(\Omega)}$$

4 INDEPENDENT CHANNELS	CHANNELS BRIDGED
150 V	300 V
121 V	242 V
101 V	202 V
83 V	166 V
70 V	140 V
56 V	112 V
47 V	94 V
38 V	76 V

[10] MODE. Select the VPK function operation and can be set on **HARD** (recommended for subwoofers and low-frequency transducers) or **SOFT** (recommended for mid and high frequency transducers).

[11] BRIDGE A+B AND C+D SWITCHES. If set to ON, channels A and B (and/or channels C+D) are bridged (the respective led **[7]** lights up). Leave it on OFF for normal two channels operation. See the 'Operation modes' manual section.

Important: make sure the amplifier is turned off before setting this switch.

[12] COMMON GAIN SETTING. Three dip-switches allow to set the common gain for all the four channels, from +23 dB to +44 dB (3 dB steps).

[13] BRIDGE LEDs (A+B) and (C+D). When lit channels A and B (and/or C+D) are bridged (see **[11]** BRIDGE switches).

[14] STEREO / PARALLEL SWITCH. See the 'Operation modes' manual section.

Important: make sure the amplifier is turned off before setting this switch.

SWITCH POSITION	MODE	FUNCTION
OFF (released)	FOUR INDEPENDENT CHANNELS	Standard operation: all the four channels are independent (but in the bridge mode). Each channel input is only sent to its respective speakers' and balanced outputs.
ON (pushed)	PARALLEL INPUTS A AND C TO ALL OUTPUTS	Inputs A or C sent to all the speakers' and balanced outputs.

[15] BALANCED AUDIO OUTPUT (CH A, CH C). Male XLR connector.

[16] POWER CORD. Connect the power cord only to a mains socket outlet with a protective earthing connection.

OPERATION MODES

FOUR INDEPENDENT CHANNELS

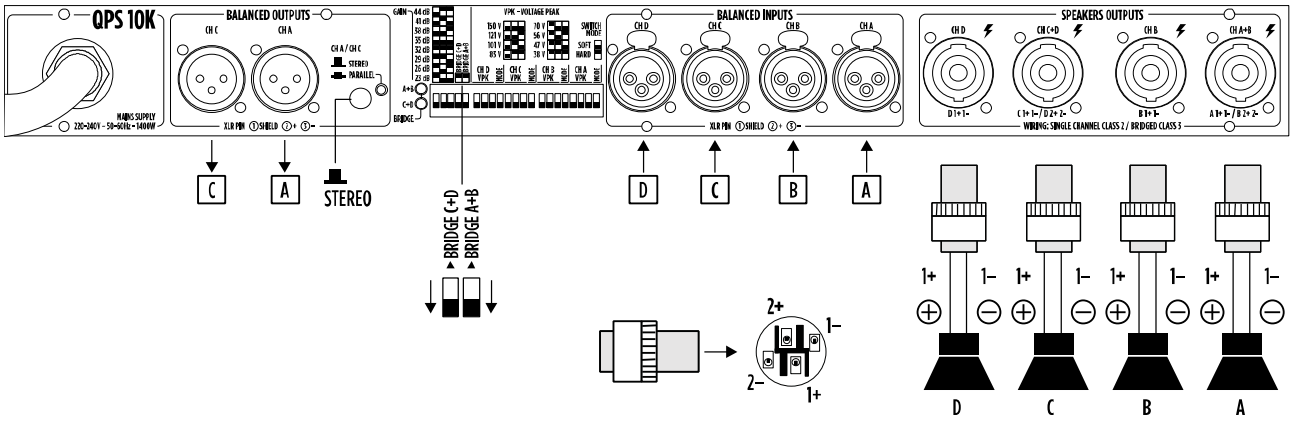
Make sure the amplifier is switched off before setting:

- BRIDGE A+B switch to OFF;
- BRIDGE C+D switch to OFF;
- switch **[14]** to STEREO.

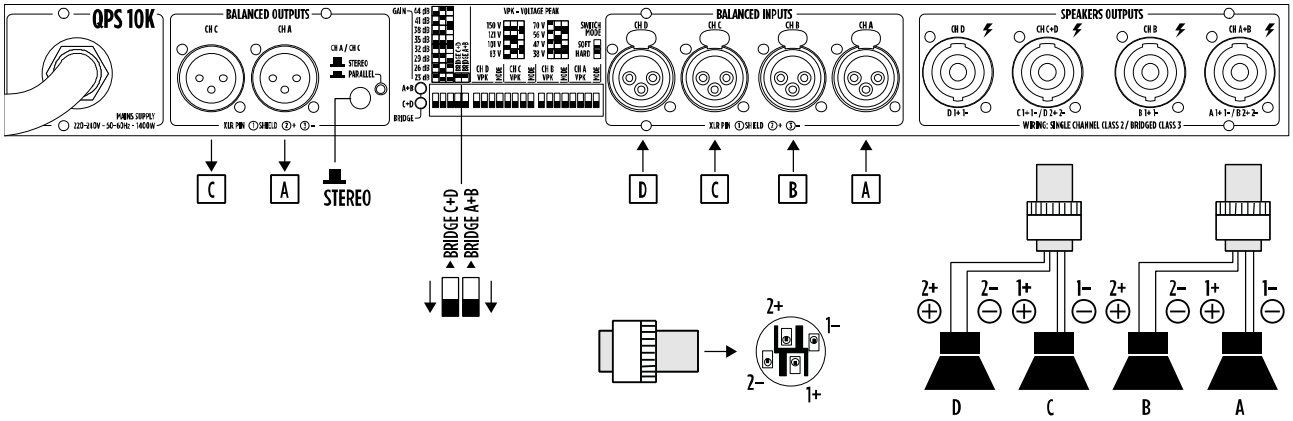
All the four channels are independent, and each front panel level control affects its respective speakers' output.

This mode can be used to implement four mono channels or two stereo channels configurations.

i Minimum load impedance is 2 Ω on each speakers' output.



As alternative wiring, it is possible to use just a pair of SPEAKON connectors (by using all the four pins): one for the channels A and B, one for the channels C and D.



ONE BRIDGED OUTPUTS PAIR AND TWO INDIPENDENT CHANNELS

Make sure the amplifier is switched off before setting:

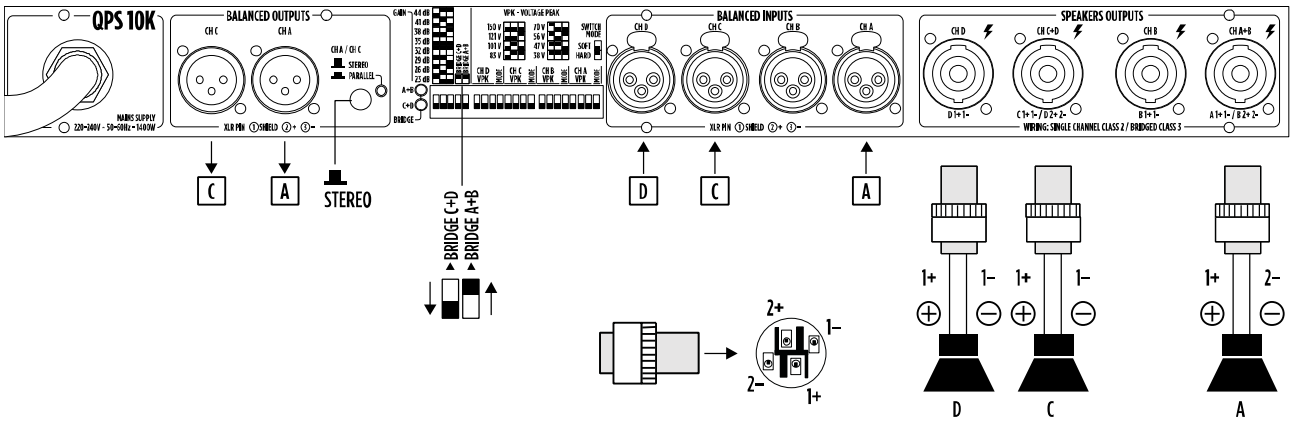
- BRIDGE A+B switch to ON;
- BRIDGE C+D switch to OFF;
- switch **[14]** to STEREO.

CHANNELS A AND B: these channels are bridged and work with the same input signal (channel A input). The result is a doubling of the output voltage in order to get a double power (on a double impedance load).

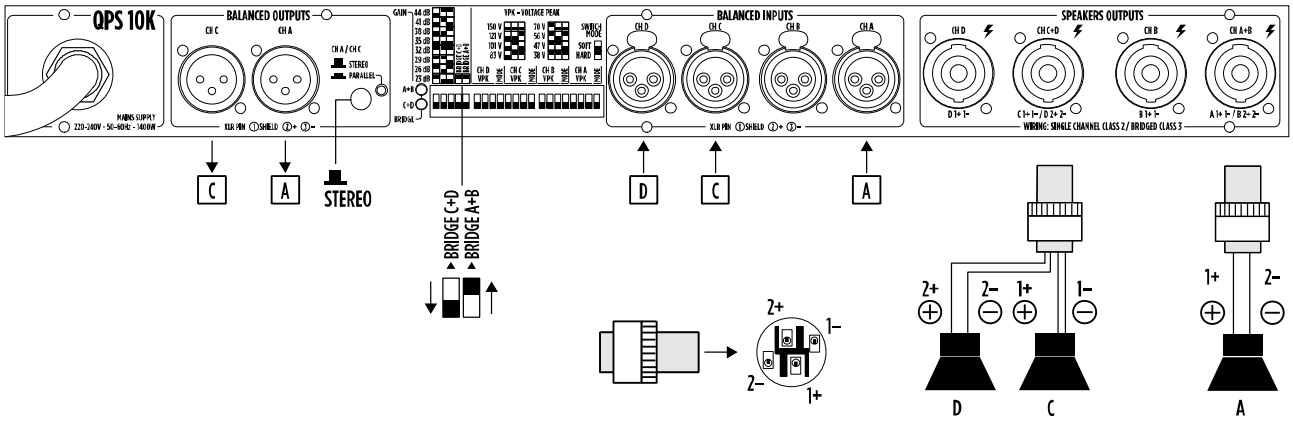
The output level is adjusted only by the channel A front panel control (turn fully counterclockwise the channel B control).

CHANNELS C AND D: these two channels are independent, and each front panel level control affects its respective speakers' output.

i Do NOT connect the channel B speakers' output. Minimum load impedance is 4 Ω on channel A speakers' output. Pay attention to the SPEAKON wiring: pin 1+ positive, pin 2- negative. Minimum load impedance is 2 Ω on speakers' output C and D.



As alternative wiring, it is possible to use just a SPEAKON connector (by using all the four pins) for the channels C and D.



i It is alternatively possible to use channels A and B separately (BRIDGE A+B switch set to OFF) and channels C and D bridged (BRIDGE C+D switch set to ON), by considering a mirror image of the description and connections here above explained.

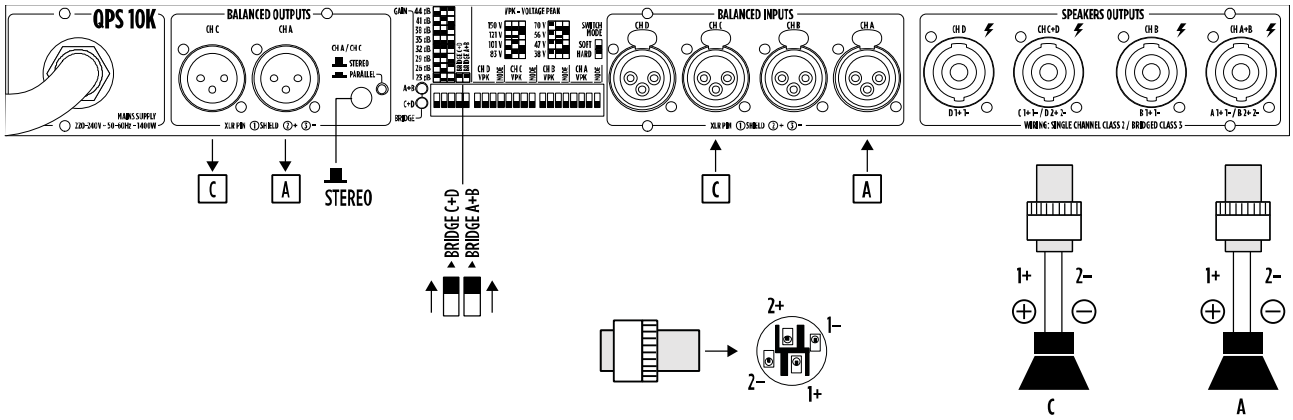
TWO BRIDGED OUTPUTS PAIRS

Make sure the amplifier is switched off before setting:

- BRIDGE A+B switch to ON;
- BRIDGE C+D switch to ON;
- switch **[14]** to STEREO.

All channels are bridged (two pairs): the result is a doubling of the output voltage in order to get a double power (on a double impedance load). Each pair works with the same input signal: channel A input for A-B channels, channel C input for C-D channels. The output levels are adjusted by the channel A and C front panel controls (turn fully counterclockwise the channel B and D controls).

i Do NOT connect the channel B and D speakers' outputs. Minimum load impedance is 4 Ω per speakers' output channels A and C. Pay attention to the SPEAKON wiring: pin 1+ positive, pin 2- negative.



SAME INPUT SIGNAL TO ALL THE FOUR CHANNELS

Make sure the amplifier is switched off before setting:

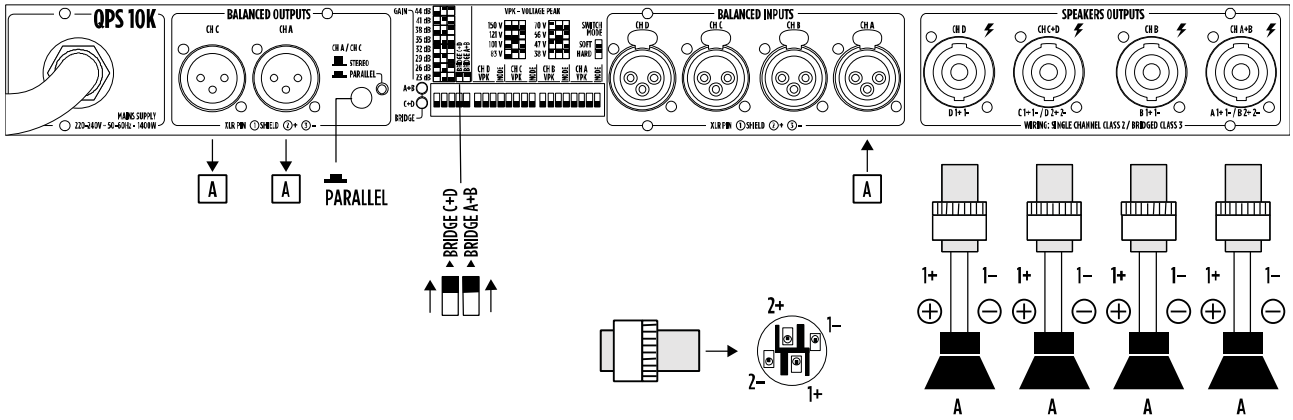
- BRIDGE A+B switch to ON;
- BRIDGE C+D switch to ON;
- switch **[14]** to PARALLEL.

In PARALLEL mode connect input A or input C only. Do not used them simultaneously.

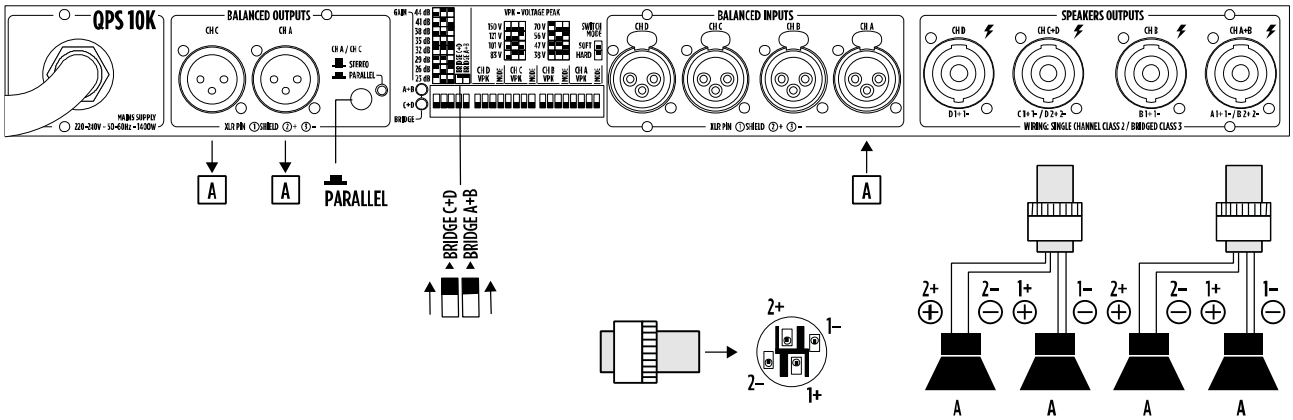
This mode can be used to send the same input signal to all the four speakers' outputs. Each front panel level control affects its respective speakers' output.

In this configuration, single channel maximum power is available on each speakers' output, despite the BRIDGE command is activated.

Minimum load impedance is 2 Ω on each speakers' output.



As alternative wiring, it is possible to use just a pair of SPEAKON connectors (by using all the four pins): one for the channels A and B, one for the channels C and D.



The same configuration can be done using input C instead of input A.

SAME INPUT SIGNAL TO BRIDGED OUTPUTS PAIRS

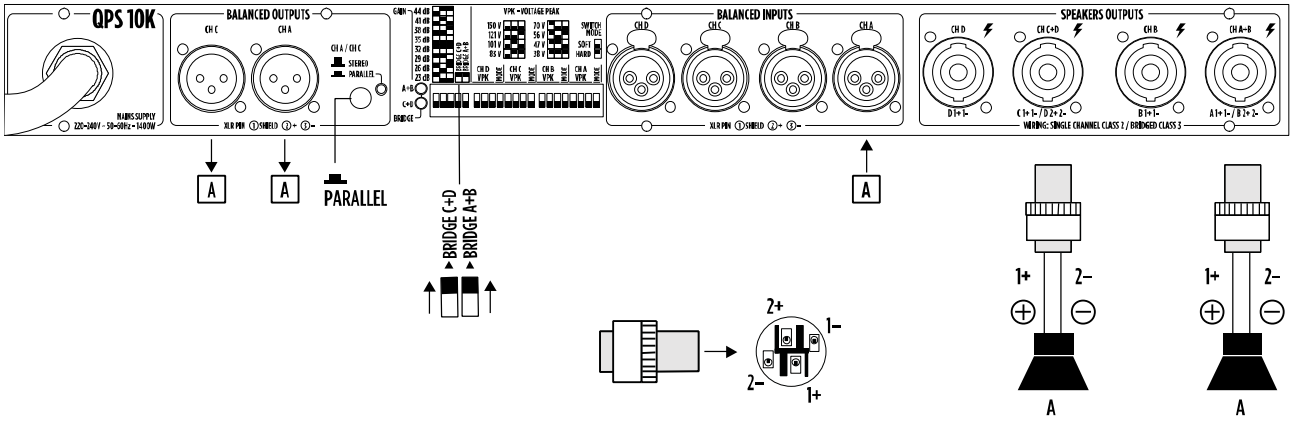
Make sure the amplifier is switched off before setting:

- BRIDGE A+B switch to ON;
- BRIDGE C+D switch to ON;
- switch **[14]** to PARALLEL.

i In PARALLEL mode connect input A or input C only. Do not used them simultaneously.

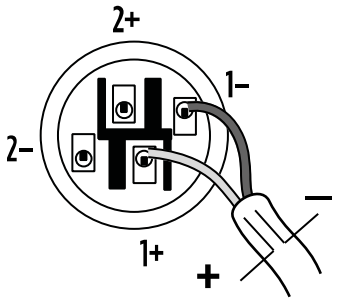
All channels are bridged (two pairs): the result is a doubling of the output voltage in order to get a double power (on a double impedance load). Both pairs work with the same channel A input. The output levels are adjusted by the channel A and C front panel controls (turn fully counterclockwise the channel B and D controls).

i Do NOT connect the channel B and D speakers' outputs. Minimum load impedance is 4 Ω per speakers' output channels A and C. Pay attention to the SPEAKON wiring: pin 1+ positive, pin 2- negative.

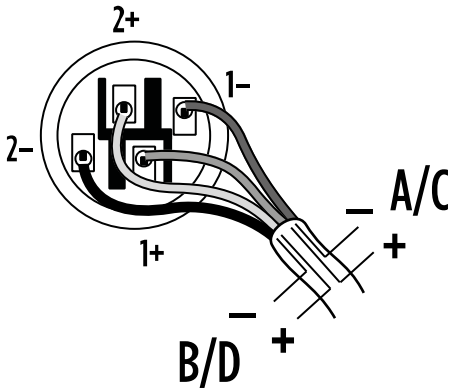


i The same configuration can be done using input C instead of input A.

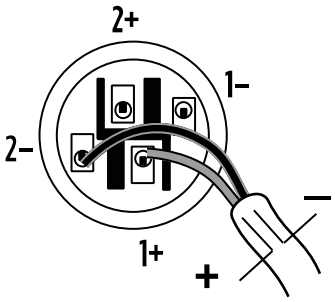
SPEAKON CONNECTORS WIRING



SINGLE CHANNEL



DUAL CHANNEL
[A (1+ 1-) B (2+ 2-)] / [C (1+ 1-) D (2+ 2-)]



BRIDGE
A (1+ 2-) / C (1+ 2-)

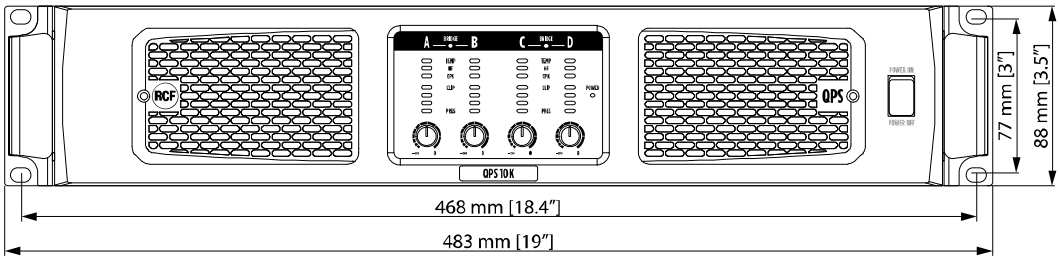
COOLING REQUIREMENTS

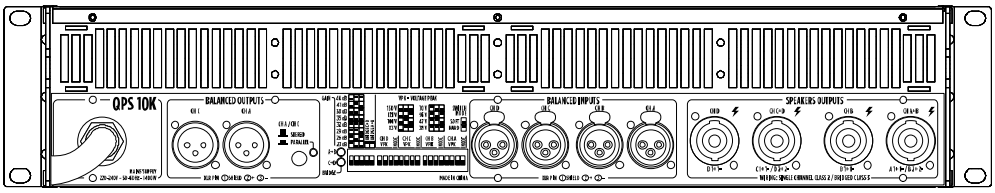
QPS 10K and QPS 6.0K have a forced air cooling system to maintain a low operating temperature.

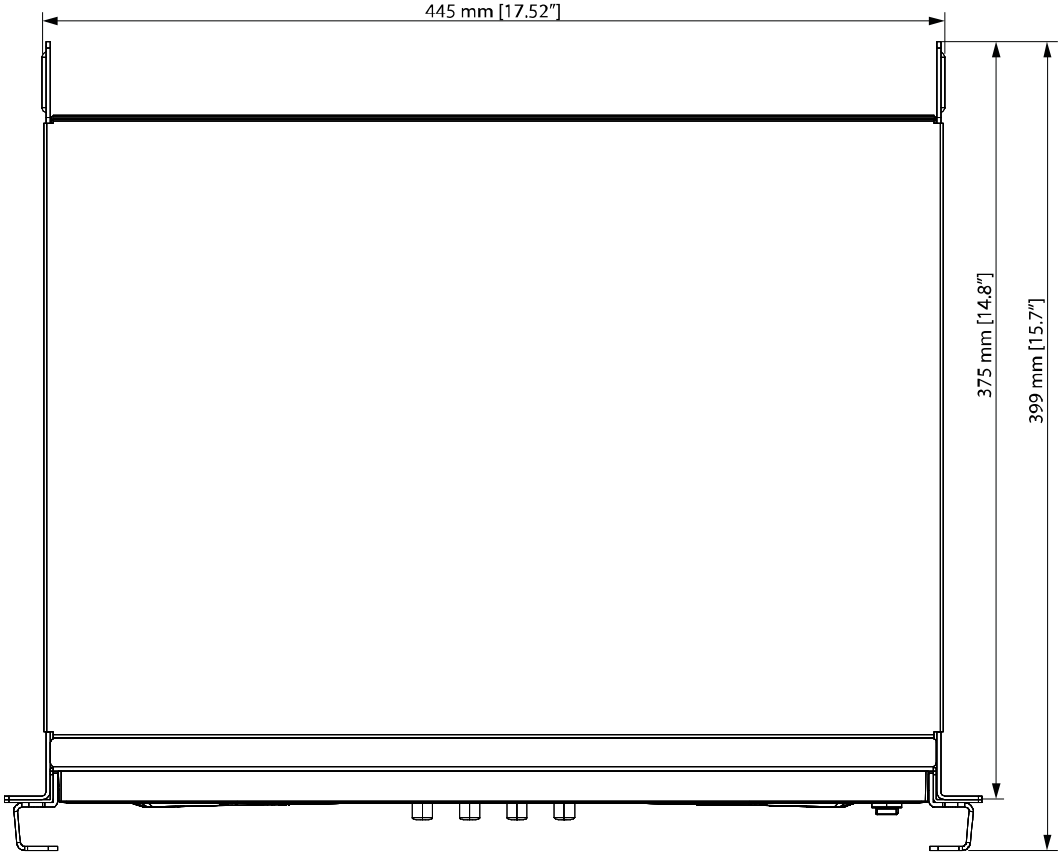
Make sure there is enough space in the front (and all around) of all amplifiers.

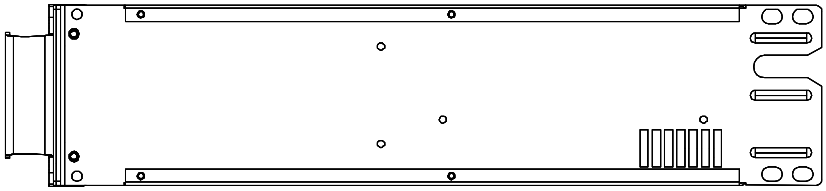
If amplifiers are rack-mounted, do not use doors or covers on the front and the rear of rack cabinets.

DIMENSIONS / DIMENSIONI









SPECIFICATIONS / SPECIFICHE TECNICHE

	QPS 10K	QPS 6.0K
Amplifier specifications		
Amplifier Class:	HD	HD
Number of channels:	4	4
Power output per channel (@ 2 ohm):	2500W RMS	1500W
Power output per channel (@ 4 ohm):	2200 W RMS	1300 W
Power output per channel (@ 8 ohm):	1400 W RMS	700 W
Power output (bridged @ 4 ohm):	5000 W RMS	3000 W
Power output (bridged @ 8 ohm):	4400 W RMS	2600 W
Frequency Response (-3dB):	20 Hz ÷ 20000 Hz	20 Hz ÷ 20000 Hz
Signal/noise rate ("A" weighted)	>110 dB	>110 dB
Crosstalk	<70 dB	<70 dB
Distortion (THD+N) @ 1 kHz nominal power:	<0.05 %	<0.05 %
Input section		
Total number of inputs:	4	4
Balanced:	4	4
Mono:	4	4
Line inputs:	4	4
Line connectors:	XLR	XLR
Output section		
Signal output number:	2	2
Signal output connectors:	XLR	XLR
Power output connectors:	Speakon	Speakon
Controls		
Configuration:	DIP switch, Front panel	DIP switch, Front panel
Protections		
Cooling:	Forced	Forced
Short circuit:	Yes	Yes
Thermal:	Yes	Yes
DC:	Yes	Yes
Fuses:	Yes	Yes
VHF (Very High Frequencies):	Yes	Yes
Power requirement		
Operating voltage:	220-240/115 V~ 50/60Hz	220-240/115 V~ 50/60Hz
Power consumption:	1900 W	1400 W
Standard compliance		
CE marking:	Yes	Yes
Physical specifications		
Cabinet/Case Material:	Metal	Metal
Handles:	Included in the front panel	Included in the front panel
Color:	Black - RAL 9005	Black - RAL 9005
Rack mounting:	19", 2U	19", 2U
Size		
Height:	88 mm / 3.46 inches	88 mm / 3.46 inches
Width:	483 mm / 19.02 inches	483 mm / 19.02 inches
Depth:	399 mm / 15.71 inches	399 mm / 15.71 inches
Weight:	15.5 kg / 34.17 lbs	13.7 kg / 30.2 lbs

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