



Park Audio

GS series

GS 4

GS 5

GS 6

GS 7

GS 8

**TWO-CHANNEL
PROFESSIONAL
POWER AMPLIFIERS**

Owner's Manual

SUPPLY KIT

Power Amplifier	1 pc.
Power Cable	1 pc.
Spare air filter	2 pcs.
Warranty	1 pc.

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AVIS
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION! The **GS4, GS5, GS6, GS7, GS8** amplifiers run on 230 VAC voltage. Removing the cover will expose you to a potentially dangerous voltage!

Do not use the unit if the electrical power cord is frayed or broken.

Power is supplied from 230 VAC single-phase grounded 50/60 Hz source.

CAUTION! The **GS4, GS5, GS6, GS7, GS8** amplifiers can yield dangerous output voltage!

Do not touch the non-insulated cable parts connected to outputs of the unit in operation!

CAUTION! The high sound pressure caused by the high output signal applied to speaker systems, may endanger your hearing. Please, take care to observe the required safety precautions.

WARNING SIGNS



Important information! Intended to warn the user about any important information contained in this Owner's Manual.



Hazardous voltage inside! Intended to warn the user about electric shock hazard due to high voltage inside the product.



This sign next to the output terminals warns about dangerous voltage while in operation.

GENERAL

The **GS4, GS5, GS6, GS7, GS8** power amplifiers (**GS** - Series) are designed for sound signal high-fidelity amplification within professional sound reproduction systems.

The amplifier's schematics provides for high sound quality whether under low signal conditions or overload.

WARNING!

Make sure to take all precautions where required.

Please, follow all instructions and guidelines.

To avoid any risk of electrical shock and/or fire hazard, please, do not expose this unit to rain or moisture. Do not use this unit near open water.

Use dry cloth to clean the unit.

Do not block fan vents.

Do not place the unit near heating radiators, furnaces or other heat-emitting devices.

Do not connect this unit to an ungrounded power supply line.

Protect the power cord against damage.

Disconnect the unit from power supply in case of thunder or during downtime.

In case of malfunctioning, caused by water or any other foreign matter inside or when the unit has been dropped, or the power cord has been damaged, or the unit has been found faulty, please, consult qualified personnel.

ATTENTION!

*The **GS4, GS5, GS6, GS7, GS8** amplifiers have the same design and functional features and differ only in the schematics elements, output power and weight. Unless specified otherwise, the word "amplifier" hereinafter applies to any of the above models.*

UNPACKING

The manufacturer's quality control system provides for careful examination of each product before it leaves the factory to ensure its flawless appearance. After unpacking, please, check the unit for any physical damage. In case of damage, please, contact your local dealer. Keep the shipping carton and all packing material, as you may require them for reshipment of the unit.

DESIGN FEATURES

Physical Design

The amplifier is enclosed in a metal (steel) case of 2U height. The amplifier is designed to be installed into a standard 19" rack.

Power Supply Source

Switchable. Individual for each channel.

Cooling System

Forced, cooling rate smooth adjustable system.

Four fans, two per each channel. Backward air flow direction.

Dust Filter

Front panel filter easily removable/replaceable for periodic maintenance.

Power Amplifier Unit

Based on TD Class schematics.

TD Class power amplifier combines the best features of both Class D and analogue amplifiers. The amplifier boasts the efficiency comparable to Class D amplifiers and sound quality typical of analogue amplifiers.

Balanced inputs

The use of balanced inputs provides for an essential reduction of the environment-induced hum and noise interference with long input connecting cables.

Input level Attenuators

Precision ALPS 31-step control knobs, individual for each channel.

Sensitivity slide switches

3 positions: 0.775V, 1.4V or 32dB fixed gain. Individual for each channel.

Mode switch

3-position slide switch.

Operating modes available:

- *STEREO* – two channels drive two separate loads from two separate signal sources;
- *MONO* – two channels drive two separate loads from a single input signal source;
- *BRIDGE* – two channels drive a common load from a single signal source.

Input filter

Third-order filter individual for each channel.

Two pre-set cutoff frequency points (35Hz and 45Hz) plus a disable position.

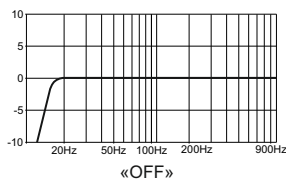
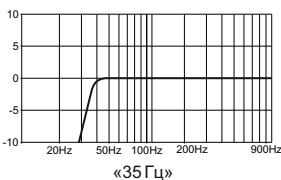
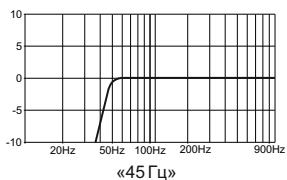
Recommended by world leading manufacturers of loudspeakers.

This filter cuts off any signals below 35Hz or 45 Hz which generally cannot be reproduced by most professional loudspeakers.

The filter significantly reduces the displacement of the LF speaker cone below the loudspeaker frequency cut-off point which makes it possible to increase the power applied to the LF speaker (the power being not wasted for the cone “flapping”) and thus to raise the sound pressure created by the loudspeaker without any danger of overheating the LF drivers

. When it is necessary to achieve a linear frequency response to drive full-range loudspeakers generally used in studios or in cinema theaters, the input filter can be disabled (bypassed for each channel individually) with the slide switches located on the amplifier rear panel.

See below the amplifier low frequency response diagrams.



Optoelectronic Clip-Limiter

Independent for each channel.

Reduces the level of the input signal and eliminates the distortion, caused by hard clipping.

Removable Power Cord

A **powerCON** 20A NEUTRIK connector for **GS4**, **GS5** and a **powerCON** 32A NEUTRIK connector for **GS6**, **GS7**, **GS8**.

This feature is provided for convenience of transportation and rack mounting.

FUNCTIONAL FEATURES

Output Short-Circuit Protection

Individual per each channel. Protects the output stage of the power amplifier against short-circuiting, as well as limits the output current when a maximum-level sine signal is applied continuously to 2-Ohms loudspeaker.

Overload Protection

The double-stage overload protection system, independent for each channel, protects the output stage and optimizes the quality sound under overload.

In the event of short overloads (for example, caused by a sharp decrease in the complex load resistance), only the current protection of the output stage is activated. It limits the output transistors current to safe level. Protect threshold allows to give full output power shortly, even on case of very low load.

In case of a more continuous overload, the protection system activates the built-in Clip-limiter, which reduces the level of the input signal.

DC Output Protection

Independent for each channel. Prevents DC damage to loudspeakers.

The amplifier's schematics precludes transit of any clicks or noise during the power-on/off transition process.

Protection of loudspeakers against DC damage is ensured for each channel by individual power supply units which are disabled in the event of output DC voltage or any powerful LF fluctuations. In case the protection system becomes active on both channels and both power supply units become disabled, all indicators go off.

The amplifier can be restarted with the POWER toggle switch, by way of turning the amplifier off and turning it on, about 2 minutes later again.

High Frequency Protection

Independent for each channel. Prevents any damage to HF drivers as might be caused by non-musical signals of powerful high frequency spectrum.

Should any powerful high frequency fluctuations occur on the output either as a result of poor contact in the input cable connectors, or being send to the amplifier's input by any other device (such as a crossover or mixing console), the protection system activates the built-in optoelectronic Clip-limiter to reduce the input signal level. Thus the protection system effectively prevents any damage to tweeters as might be caused by non-musical signals of powerful high frequency spectrum.

Thermal Protection

Independent for each channel. Protects the amplifier's output stage against overheating.

The amplifier may stop functioning only in case of the fan breakdown or blocked air flow. In this case upon reaching 85°C, the independent protection system disables the respective channel of the amplifier. The CLIP LED goes on and the SIGNAL LED of the affected channel goes off. The amplifier resumes its operation in the reverse order.

As soon as the amplifier cools down, the affected channels gradually regain their amplification level up to the set value.

Soft Start

Reduces the power-on inrush current.

The soft start system is provided to reduce inrush current to the amplifier and to minimize the noise contributed by the amplifier to the power mains during the power-on process.

Soft Signal Start

Ensures smooth power-on sound signal rise.

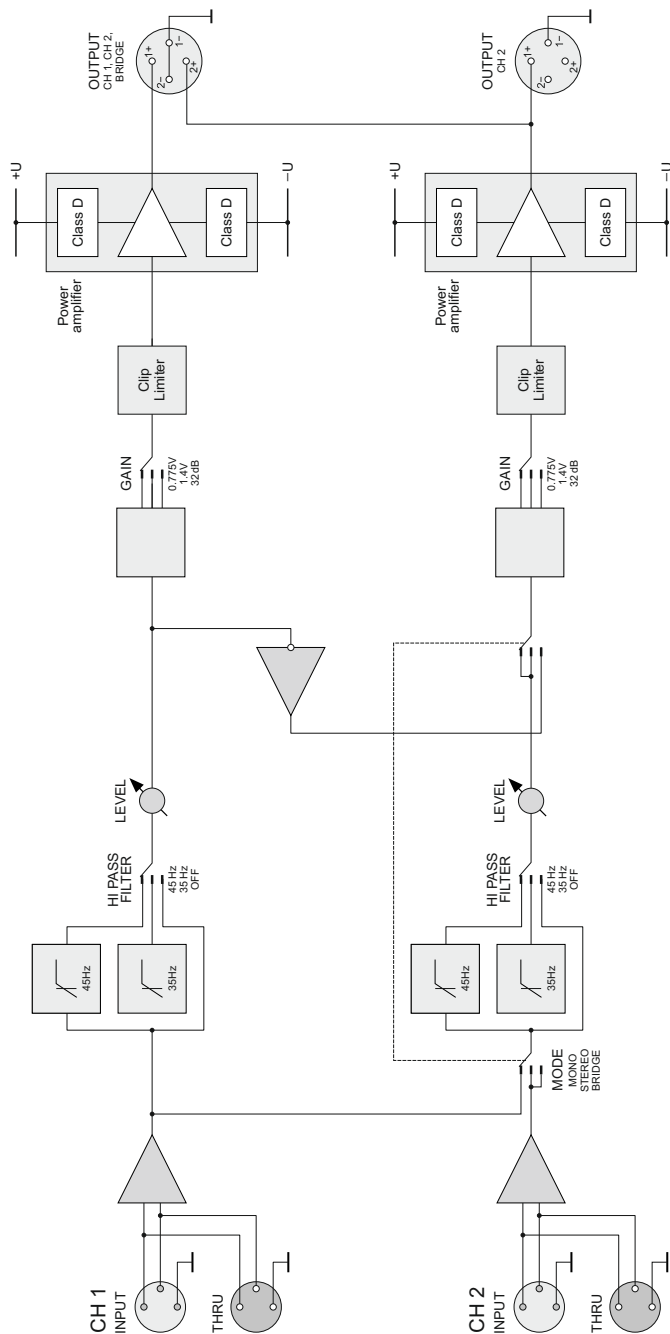
During the power-on process, this feature ensures smooth gain from zero to the maximum level to provide for a smooth rise of the sound level emitted from the loudspeakers.

Overvoltage Protection System

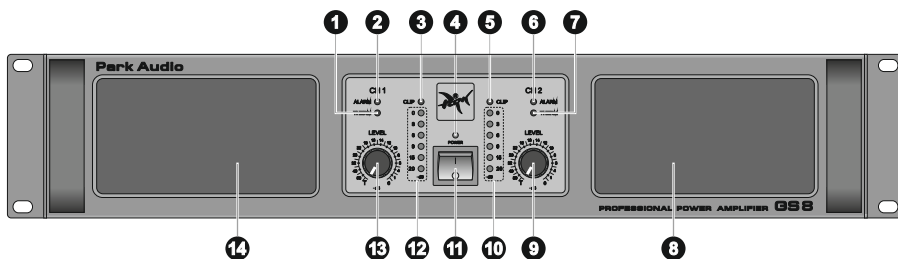
Relay system. Used to protect the amplifier against overvoltage in the mains.

In case of accidental connection of the amplifier to incorrect-wired mains, the inter-phase voltage of 400V may be applied to the amplifier. In this case the protection system will block the mains connection to the power supply. Only the protection system stand-by power supply unit remains in operation. The system activates, whenever the mains voltage exceeds ~265V. The amplifier automatically resumes operation after the mains voltage goes down to ~260V.

AMPLIFIER BLOCK DIAGRAM



FRONT PANEL



- 1 7 THERM** LEDs – thermal protection indicators.
- 2 6 ALARM** LEDs – DC output or powerful LF fluctuation alarm condition*.
- 3 5 CLIP** LEDs – overload indicators.
- 4 POWER** LED.
- 8 14** Dust filters.
- 9 13 LEVEL**– input signal attenuators**.
- 10 12** LEDs – indicate the signal level (dB) at the amplifier output.
- 11 POWER** switch.

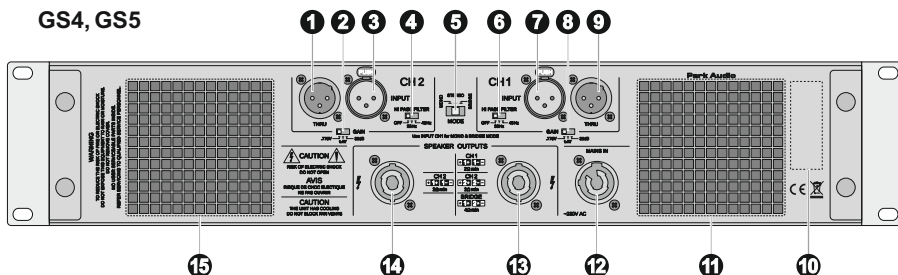
Notes: * Upon power-on, the LEDs go on for a while. This is normal.

** Input level Attenuators dB attenuation 31-step control knobs .

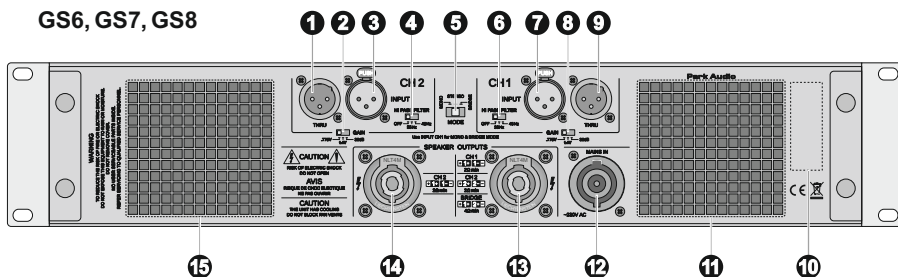
***WARNING!** The above knobs adjust the sensitivity level rather than the amplifier output power.*

REAR PANEL

GS4, GS5



GS6, GS7, GS8



- 1 9 THRU** – line outputs (XLR male).
Used to deliver input signal to the input of another amplifier. THROUGH connectors are parallel to INPUT connectors of respective channels.
- 2 8 GAIN** – input sensitivity.
Used to select the input sensitivity (0.775V, 1.4V) or a 32dB fixed gain.
- 3 INPUT** – Channel 2 balanced input (XLR female).
- 4 6 HI PASS FILTER** – cutoff filter switches.
Used to set the required cutoff frequency (35Hz or 45Hz) or to disable the filter (See: Input Filter).
- 5 MODE** switch:
 - MONO – two channels drive two separate loads from a single input signal source;
 - STEREO – two channels drive two separate loads from two separate input signal sources;
 - BRIDGE – two channels drive a common load from a single input signal source.

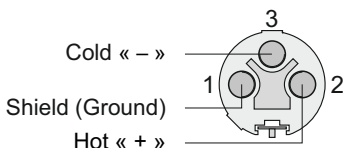
- 7 INPUT**— Channel 1 balanced input (XLR female).
Used to supply input signal to channel 1, channel 1 and 2 (in MONO mode), and a common input signal (in BRIDGE mode).
- 10** Label.
Contains the amplifier model designation, power ratings and Serial No.
- 11 15** Air vents
- 12 MAINS IN** — power cord socket (**powerCon**) for 230V AC 50/60Hz grounded mains.
- 13** Channel 1/2/ bridge output, used either to connect a load (loudspeaker) to Channel1, or to connect it to both channels, with a single **SPEAKON** connector, as well as to connect a load (loudspeaker) to the amplifier in BRIDGE Mode.
- 14** Channel 2 output
Used to connect a load (loudspeaker) to Channel 2.

INPUT AND OUTPUT CONNECTORS

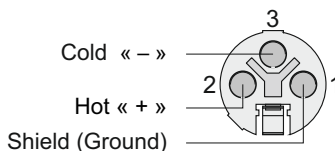
Input Connectors

Use **XLR** (male) connectors to connect to the amplifier inputs and **XLR** (female) connectors to line outputs.

XLR male



XLR female

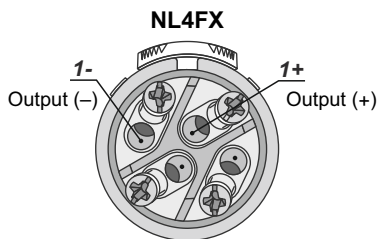
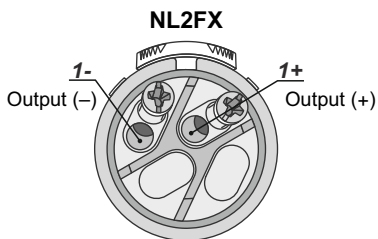


Output Connectors

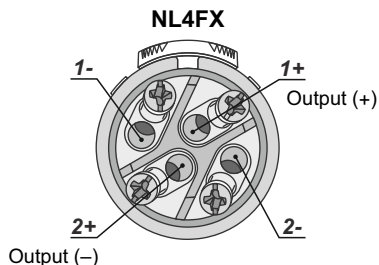
To connect loudspeakers to the amplifier outputs, use **SPEAKON** NL2FX connectors. Use a **SPEAKON** NL4FX or NLT4FX connector for bridged connection or for connection of both channels with a single cable.

The **SPEAKON** NL2FC or NL4FC connectors may be used to connect loudspeakers to the outputs of **GS4** or **GS5** amplifiers.

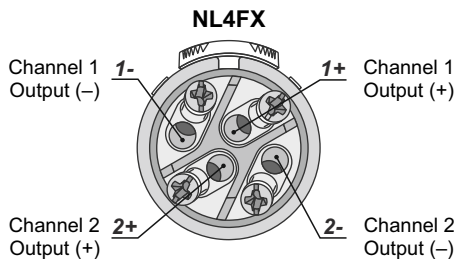
Wiring for Loudspeakers Connection at STEREO and MONO MODE



Wiring for Loudspeakers Connection at BRIDGE MODE



Wiring for Loudspeakers Connection for connecting two channels with a single connector



Use a POZIDRIVE PZ1 screwdriver to connect cables to connectors. Never use a PHILIPS screwdriver. See the detailed wiring information at <http://www.neutrik.com>

CAUTION! Never attempt to jumper or otherwise link up any pins of output connectors.

CABLE REQUIREMENTS

Input Cables

Make sure to use only shielded cables whether balanced or unbalanced. Shielding when properly grounded protects a signal against external electrical interference. As a rule, unbalanced lines of over 3 meters long are not acceptable. Greater distances require a balanced cable.

Avoid placing input cables close to power cords or power transformers.

Output Cables

The amplifier is capable of delivering high level output current; therefore, the wire gauge used for speaker cables is particularly important. Inadequate wire gauge adds significant resistance to the speaker's own impedance, reducing the power which is actually delivered to the speaker. It will also result in a decreased damping factor and possible fire hazard.

Since the power applied to the loudspeaker is of primary concern in system design, we have included the table below to allow you determine the appropriate wire gauge for your application.

Power Loss in a 10-meter Cable

Wire Gauge (mm ²)	Cable Resistance (Ohms)	Cable power loss		
		20hm load	40hm load	80hm load
1.50	0.24	10.7 %	5.7 %	2.9 %
2.00	0.18	8.3 %	4.3 %	2.2 %
2.50	0.15	7 %	3.6 %	1.8 %
4.00	0.09	4.3 %	2.3 %	1.1 %
6.00	0.06	2.9 %	1.5 %	0.7 %

The table shows the percentage of the power loss in a 10-meter copper multiple-core cable. This table reflects the power loss as a percentage of the output power of the amplifier applied to the load. Use this table to determine the power loss to the load at other cable lengths. For example, if you plan to deliver 1000Watts to 2-Ohms load through 20m of 2.5-mm² cable, the power loss in the cable would be 7 % x 2=14 % of 1000W or 140W lost in the cable.

AC POWER REQUIREMENTS

Use 230 V 50/60 Hz single-phase grounded power supply mains for amplifier.

The quality of the AC power supply mains is of prime importance for the amplifier functioning. The amplifier should be powered from the mains designed for at least 1.5 times the average current consumed by the amplifier.

Never try to connect the amplifier to a household power supply mains.

Use the power cord supplied. The power cord supplied with a **GS6**, **GS7** or **GS8** amplifier has only a PowerCon connector on one side. The other side of the cord should be connected either directly to the power distributor terminal box or to an industrial-type three-pin plug. Use a plug designed for the current rating not less than the average current consumed by the amplifier.

Connection and wiring must be performed by a qualified technician.

Never use household-type electric plugs.

Prior to plugging, please, make sure that there are no other devices consuming much AC current, as the normal operation of such several devices may be impossible. In the event of line voltage sag, the unit will continue to operate normally, albeit with less power.

The actual AC current consumption by the amplifier depends on the type of the music program and the load impedance. While installing the audio systems, in order to optimize the power wiring, please, note that for reproduction of typical audio material at the full output level, the average current consumption rate is as follows:

- 4/7 A for **GS4** into 4/2 Ohms;
- 5/9 A for **GS5** into 4/2 Ohms;
- 6/11 A for **GS6** into 4/2 Ohms;
- 7/11 A for **GS7** into 4/2 Ohms;
- 8 A for **GS8** into 4 Ohms.

* **Note:** The above ratings are given for a crest-factor 3 musical signal. Some modern music genres may have less crest factor, which may lead to increased current consumption.

In order to minimize the AC current hum and noise, make sure to plug all audio devices interconnected with signal cables, into the same mains outlet.

RACK-MOUNTING REQUIREMENTS

The amplifier is designed to fit a standard 19" rack. While mounting, make sure to provide unhindered air access to the front and rear sides of the rack. The fan blows air backwards. It is not necessary to leave empty space above or below the amplifier. Prior to installing the amplifier into the rack, remove the rubber feet from the amplifier bottom panel. Having done that, put the amplifier into the rack and secure it in place with four screws with washers. The manufacturer strongly recommends to secure the amplifier rear brackets to the rack, too. Where required, use a transition bracket (optional) to extend the mounting depth of the amplifier mounted into the rack.

OPERATING MODES

STEREO Mode

Two input signals are linked up to the input connectors of respective channels.

Speakers are linked up to the output of respective channels. See the connector wiring in the Loudspeaker Connector Wiring Section.

MODE switch is set to STEREO.

For most applications, it is recommended to set the input HI PASS FILTER switches to 45Hz or 35Hz (depending on the specific application and/or loudspeaker ratings). However, when it is necessary to obtain a linear frequency response to drive full-range loudspeakers, as in studios or cinema houses, set this input filter switch to OFF. See the Input Filter Section.

To adjust the level of input signal, use a LEVEL control of each channel.

MONO Mode

Input signal is linked up to Channel 1 input connector.

Speakers are linked up to the output of respective channels. See the connector wiring in the Loudspeaker Connector Wiring Section.

MODE switch is set to MONO.

For most applications, it is recommended to set the input HI PASS FILTER switches to 45Hz or 35Hz (depending on the specific application and/or loudspeaker ratings). However, when it is necessary to obtain a linear frequency response to drive full-range loudspeakers, as in studios or cinema houses, set this input filter switch to OFF. See the Input Filter Section.

To adjust the level of input signal, use a LEVEL control of each channel.

BRIDGE Mode

Input signal is linked up to Channel 1 input connector.

Speaker is linked up to Channel 1 output.

See the connector wiring in the Loudspeaker Connector Wiring Section.

MODE switch is set to BRIDGE.

WARNING! The GAIN sensitivity switches, located on the rear panel, must be always set to the same position on both channels.

For most applications, it is recommended to set the input HI PASS FILTER switches to 45Hz or 35Hz (depending on the specific application and/or loudspeaker ratings). However, when it is necessary to obtain a linear frequency response to drive full-range loudspeakers, as in studios or cinema houses, set this input filter switch to OFF. See the Input Filter Section.

Use channel 1 LEVEL control to adjust the level of the input signal.

*** Note:** In this mode, only Channel 1 switch is active.

MAINTENANCE

Cleaning of Dust Protective Air Filter

No special tools are required for removing the filter. Just grip it and pull. Wash the filter with any detergent, flush it with water, let it dry and re-install.

In case the filter is worn out, replace the filter with a spare one supplied.

ATTENTION! *Never install a wet filter.*

Do not dry the filter with hot air or expose it to direct sun rays.

SPECIFICATIONS

Output Power:

– GS4	2000W (channel, 2Ohms, ~230V) 1500W (channel, 4Ohms, ~230V) 3600W (bridge, 4Ohms, ~230V) 2700W (bridge, 8Ohms, ~230V)
– GS5	2500W (channel, 2Ohms, ~230V) 2000W (channel, 4Ohms, ~230V) 4500W (bridge, 4Ohms, ~230V) 3600W (bridge, 8Ohms, ~230V)
– GS6	3000W (channel, 2Ohms, ~230V) 2300W (channel, 4Ohms, ~230V) 5400W (bridge, 4Ohms, ~230V) 4140W (bridge, 8Ohms, ~230V)
– GS7	3500W (channel, 2Ohms, ~230V) 3000W (channel, 4Ohms, ~230V) 6300W (bridge, 4Ohms, ~230V) 5400W (bridge, 8Ohms, ~230V)
– GS8	4000W (channel, 4Ohms, ~230V) 2200W (channel, 8Ohms, ~230V) 7200W (bridge, 8Ohms, ~230V)

Total Harmonic Distortion:

0.02% (1kHz, Rnom.)
0.05% (20Hz – 20kHz, Rnom.)

Slew Rate:

60V/μs (channel)
120V/μs (bridge)

Frequency Response:

20Hz – 20kHz (±0.2dB, Pnom., Rnom.)
10Hz – 60kHz (±1dB, 1W, Rnom.)

Damping Factor:

800 (1kHz, 8Ohms)

Channel Separation:

60dB (1kHz)

Signal-to-Noise Ratio:

100dB (unweighted)

Sensitivity:

0.775V, 1.4V, 32dB (switchable)

Input Impedance:

10kOhms (balanced)

High-pass Filter Cutoff Frequency: 35Hz, 45Hz
High-Pass Filter Slope Rate: 18dB/octave
Power Requirements: ~230B, 50/60Гц

Weight:

– GS4	14.0kg
– GS5	14.2kg
– GS6	14.4kg
– GS7	14.6kg
– GS8	14.8kg

\Dimensions:

– width	482mm
– height w/o feet	88mm (2U)
– height plus feet	96mm
– depth	506mm
– depth in rack	461mm

OPERATING CONDITIONS

Air temperature: 5 ... 35°C
Atmospheric pressure: 86.6 ... 106.7kPa (650 – 800 MMHG)
Relative humidity: less than 80%



Park Audio
www.parkaudio.ua