



RX series

RX9d

**FOUR CHANNEL PROFESSIONAL
SWITCHING POWER AMPLIFIER**

Owner's Manual

ACCESSORIES

- | | |
|-------------------|-------|
| 1. Power Cord | 1 pc. |
| 2. Dust filter | 2 pcs |
| 3. Owner's Manual | 1 pc. |
| 4. Warranty | 1 pc. |



AVIS
RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

CAUTION!

The amplifier runs on 230V AC 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 V AC single-phase grounded 50/60 Hz source!

CAUTION!

To reduce the risk of fire or electric shock, do not expose the amplifier to rain or moisture!

CAUTION!

*The amplifier can yield **dangerous** output voltage! Do not touch the non-insulated cable parts, connected to 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 four-channel professional power amplifier **RX9d** is designed for sound signal high-fidelity amplification within professional sound reproduction systems.

The amplifier is equipped with built-in **DSP** engine (**DFM audio**, Germany), which provides the precision processing of the audio signal. To control the parameters of the amplifier (or group of amplifiers) the program **NetControl** is used, the amplifiers are connected via the **ETHERNET** interface.

To ensure faultless operation of amplifiers, please, take time to read this Manual before use.

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.

WARNING!

The amplifier yields high output power. The manufacturer shall not be held responsible for any damage to the speakers caused by excessive power from the unit.

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.

The amplifier must be fixed at four points, when installed in the RACK 19 "(two points in front and two at the rear).

Power Supply Unit

Two independent switch-mode PSU. Individual for each pair of channel.

Cooling System

Forced, cooling rate smooth adjustable system.

Two powerful fans. Backward air flow direction.

Dust Filter

Two removable filters are located on the front panel under protective covers.

Covers can be removed and installed without the use of any tools.

Power Amplifier Units

RX9 amplifier is based on a modern, high performance **D** class topology.

This topology provides high efficiency, low heat generation and large output power. At the same time, the high switching frequency of the output stage (450 kHz) provides sound quality comparable with the best analog amplifiers.

Analog inputs

The amplifier is equipped with four balanced analog inputs (XLR female).

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

For DSP processing, the analog signal is converted to digital using four 24-bit A/D converters, operating at 96 kHz. The dynamic range of A/D and D/A converters is 120 dB.

AES inputs

Inputs of channels 1 and 2 can be switched to digital input mode.

A digital AES/EBU two-channel audio signal can be applied to each input. Sound signals can be sent to an amplifier from a digital mixing console or other device, that generates a digital audio signal AES/EBU (AES3). The AES/EBU inputs have balanced transformers and are protected against static electricity. Built-in sample rate converters support a wide range of input formats (16-24 bit / 44.1-192 kHz), converting any of them into internal format 24bit/96kHz.

ETHERNET connectors

Two equivalent ports for connection to the ETHERNET network.

*Provide the ability to configure and remotely control the amplifier over a network, using the **NetControl** software. The built-in router allows you to connect multiple amplifiers in chain.*

Line Outputs

Four XLR connectors (male).

Provide the possibility of parallel connection of several amplifiers, using standard signal cables.

When analog input signal is used, the line outputs are connected in parallel to the corresponding line inputs. When the digital input signal is used, the outputs are connected to the corresponding inputs via buffer amplifiers.

DSP engine

The amplifier is equipped with a flexible and powerful high-end DSP from DFM audio, Germany.

The close integration of processing and amplification allows the DSP to monitor and better respond to amplifier behavior, making dynamics processing far more accurate and effective than that typically achieved with separate components. The onboard DSP offers four channels of crossover filters, parametric EQ, FIR filter and alignment delay – everything needed to optimize a loudspeaker system.

Flexibly configurable RMS and PEAK limiters in each channel ensure reliable loudspeakers overload protection.

DSP settings control is performed via ETHERNET, using personal computer with the installed NetControl software.

For use in large installations, the processor has the tools for group control of many amplifiers simultaneously. The amplifier can be supplied with pre-formed library of passive speakers.

Software is designed for group control of a large number of amplifiers simultaneously. The program provides the ability to create virtual systems, which can be automatically merging with real amplifiers.

It is based on the work with Speaker and Preset libraries. The amplifier can be supplied with pre-installed Speaker libraries. Also, the user can update the Speaker library or create his own library. When creating a sound system, the user simply selects the desired type of loudspeaker from the library.

User Interface

LCD display, LED indicators and controls (encoder and 4 buttons with illumination).

LED indicators on the front panel shows a signal presence, limiters activation and the overload of each amplifier channel. Encoder, LCD and buttons provide local access to navigation and DSP control.

Removable Power Cord

NEUTRIK powerCON 20A.

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

FUNCTIONAL FEATURES

Output Overload and Short-Circuit Protection

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

In case short-time overload (e.g. overload, caused by a sudden drop of complex load impedance), the fast output stage protection system limits the output current to 60 A.

In case of long-term overload (>0.5 sec), the slow protection system limits the output current to 40 A.

In case of a short circuit, the protection system momentarily blocks the output of the amplifier. The processor periodically tries to turn on the amplifier. If the short-circuit persists for a long time, test attempts are made less often.

The protective system does not switch the amplifier off, so it resumes its unattended operation after the short-circuiting conditions are gone.

Built-in to each channel microprocessor ensures safe operation.

DC Output Protection

Independent for each pair of 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 pair of 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 all 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.

Thermal Protection

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

In case the temperature of the output stage transistors rises to 80°C, the CLIP LED of the corresponding channel lights up. At the same time, the thermal protection system will gradually reduce the signal level as the temperature increases. When the output stage reaches 85°C, the thermal protection system will block the input and output stage of the corresponding amplifier channel. After the temperature drops to 70°C, the amplifier automatically resumes operation.

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 poweron 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

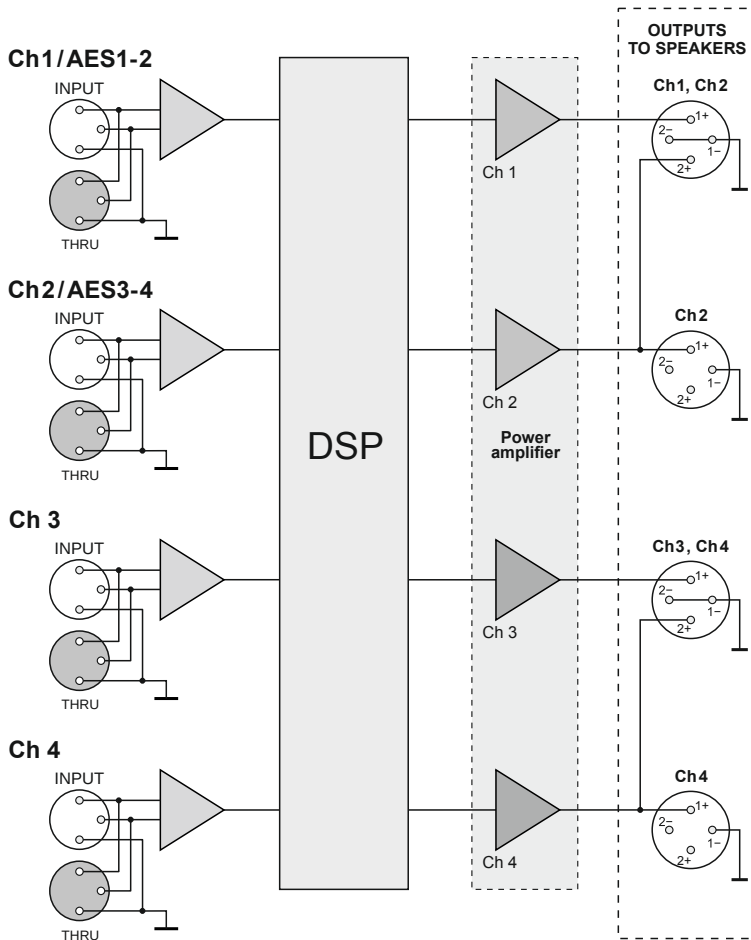
Relay system. Used to protect the amplifier against overvoltage in the mains.

In case of accidental connection of the amplifier to incorrect-wired mains, the inter-phase voltage of 400 V 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 ~265 V. The amplifier automatically resumes operation after the mains voltage goes down to ~260 V.

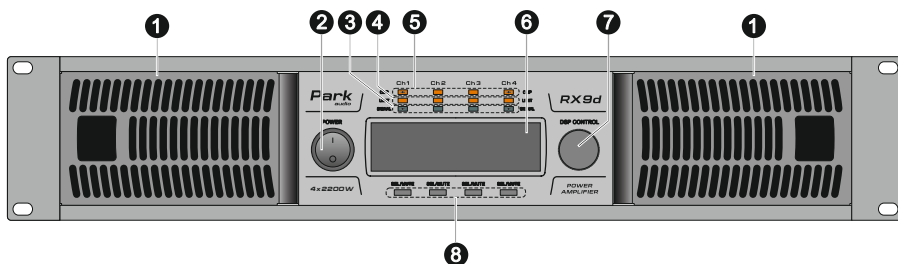
Microcontrol Monitoring

All amplifier protection systems are controlled by the microcontrollers, built into each channel of the amplifier. Microcontrollers constantly monitor protection and control systems, which increases the overall reliability and fault tolerance of the amplifier.

AMPLIFIER BLOCK DIAGRAM

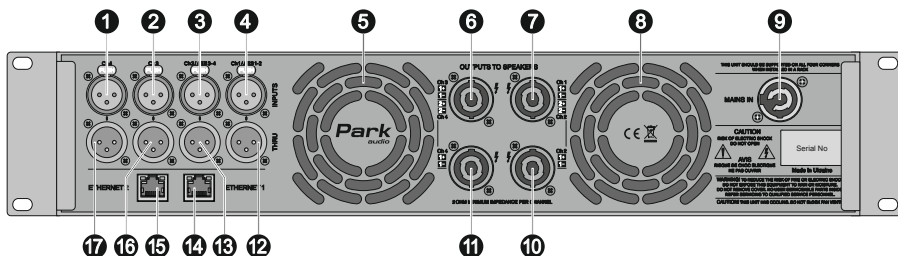


FRONT PANEL



- ❶ Dust filter cover grills.
- ❷ **POWER** switch.
- ❸ **SIGNAL** LEDs indicating output signal on Channels 1... 4.
- ❹ **LIMIT** – Channel 1,2,3 and 4 limiters activation LEDs.
- ❺ **CLIP** – overload LEDs for channels 1, 2, 3 and 4.
Indicating overload and distortion occurrence.
- ❻ 2 x 20 characters LCD display
- ❼ **DSP CONTROL** – encoder knob for the menu navigation and parameters setting.
- ❽ **SEL/MUTE** – channel selection for setting parameters/ mute corresponding channel.

REAR PANEL



1 2 3 4 INPUTS (Ch1/AES1-2, Ch2/AES3-4, Ch3, Ch4) – balanced inputs (XLR female). For analog signal connection Ch1/AES1-2, Ch2/AES3-4, Ch3, Ch4 are used. For digital signal connection Ch1/AES1-2 and Ch2/AES3-4 are used.

Analog/digital signal choice is performed via local amplifier interface or **NETControl** software.

5 8 Output fan grill.

6 7 10 11 SPEAKER OUTPUTS – output **SpeakOn** connectors for speakers connection. Connectors pin assignment are marked on the amplifier rear panel.

9 MAINS IN – mains cable connector.

12 13 16 17 THRU – line outputs. Used for sending the input signal to another amplifiers. In analog signal mode **THRU** connectors are parallel to corresponding **INPUTS** (Ch1/AES1-2, Ch2/AES3-4, Ch3, Ch4). In digital mode **THRU** connectors (Ch1/AES1-2, Ch2/AES3-4) are linked to corresponding inputs via buffer amplifier.

16 17 ETHERNET 1, ETHERNET 2 – RJ45 connectors for ETHERNET network connection.

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.

Wire Gauge	Cable Resistance	Cable Power Loss		
		2 Ohm Load	4 Ohm Load	8 Ohm Load
1.50 mm ²	0.24 Ohm	10.7 %	5.7 %	2.9 %
2.00 mm ²	0.18 Ohm	8.3 %	4.3 %	2.2 %
2.50 mm ²	0.15 Ohm	7 %	3.6 %	1.8 %
4.00 mm ²	0.09 Ohm	4.3 %	2.3 %	1.1 %
6.00 mm ²	0.06 Ohm	2.9 %	1.5 %	0.7 %

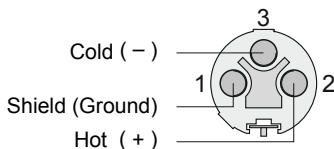
The table shows the percentage of the power loss in a 10-meter copper multiple-core cable. This table reflects the power loss as a percentage of the output power of the amplifier applied to the load. Use this table to determine the power loss to the load at other cable lengths. For example, if you plan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

INPUT AND OUTPUT CONNECTORS

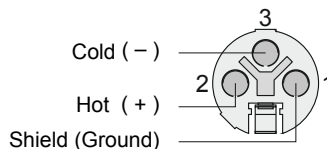
Input Connectors

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

XLR Wiring (male)



XLR Wiring (female)

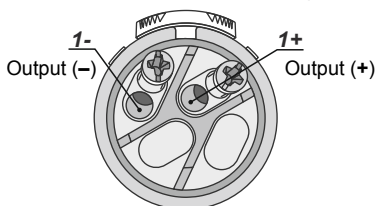


Output Connectors

Use SpeakON **NL2FX** (**NL2FC**) or **NL4FX** (**NL4FC**) connectors to connect speaker systems to the amplifier individual channel outputs. For connection of both channels via a single cable, use SpeakON **NL4FX** (**NL4FC**).

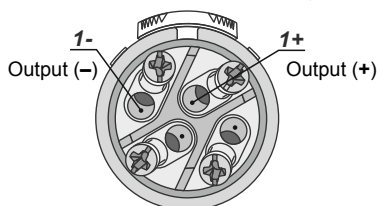
NL2FX

for individual channel linking up



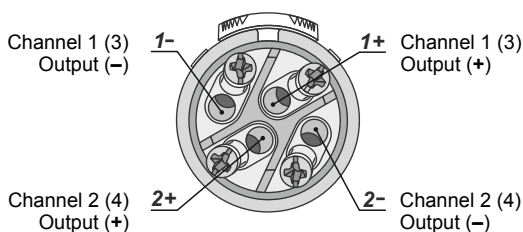
NL4FX

for individual channel linking up



NL4FC

for linking up two channels with a single connector



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

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. Fix the amplifier at four points, when installed in the RACK 19" (two points in front and two at the rear). Where required, use a adaptor bracket (optional) to extend the mounting depth of the amplifier mounted into the rack.

AC POWER REQUIREMENTS

Use ~220/230 V 50/60 Hz single-phase grounded mains.

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 mains.

If connected to weak power supply mains, the output power of the amplifier may be reduced producing the so-called «feeble bass» effect, or the power supply line may be damaged.

Use the power cord, supplied with amplifier.

Before connecting, 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:

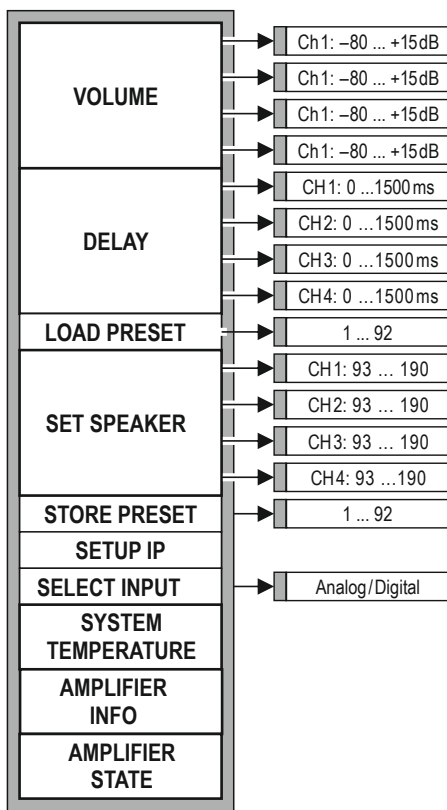
- 8 A for operation at 8 Ohm (for all channels);
- 13 A for operation at 4 Ohm (for all channels);
- 16 A for operation at 2 or 2.7 Ohm (for all channels).

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.

AMPLIFIER SETUP

DSP settings control is performed via **ETHERNET**, using personal computer with the installed **NetControl** software.

Some **DSP** engine settings are available in the amplifier system menu.



VOLUME – signal level setting for each channel.

DELAY – delay setting for each channel.

LOAD PRESET – presets loading from Preset Library (memory cell 1 ... 92). Applied to all channels simultaneously.

SET SPEAKER – Speaker presets loading from Speaker Library (memory cells 93 ... 190). Applied to all channel separately.

STORE PRESET – current setting store as user preset into Preset Library (in one of the memory cells (1 ... 92).

SETUP IP – amplifier IP address setting.

SELECT INPUT – input mode choice (analog or digital AES/EBU).

SYSTEM TEMPERATURE – amplifier temperature.

AMPLIFIER INFO – information about amplifier.

AMPLIFIER STATE – amplifier state information. Shows error codes.

Enter the menu by short clicking the encoder knob **DSP CONTROL**.



Choose the needed menu item by knob **DSP CONTROL** rotation.

Current menu item is marked by the arrow cursor (left and right).



```

0:MAIN MENU
1:VOLUME
  
```

To make changes in the current menu item short click the **DSP CONTROL knob**.



```

Volume CH=1 [bar] 0.0
+0 +0 +0 +0
  
```

Rotating the **DSP CONTROL knob** set the needed parameter setting.

In this menu item (VOLUME) signal level for each channel is set. The desired channel is chosen by clicking SEL/MUTE button for the corresponding channel. The channel number is indicated in the upper line of the LCD-display. Rotating the **DSP CONTROL knob** changes parameter with step 0.1 dB. The step can be changed from 0.1 dB to 1 dB and vice versa by short clicking **DSP CONTROL knob**.



```

Volume CH=1 [bar] +4.3
+4 +0 +0 +0
  
```

No parameters confirmation needed. It is enough to choose another channel or exit from current menu item. To exit current menu item press and hold **DSP CONTROL knob**.

When the power is turned off, the amplifier remembers the current settings. When amplifier is turned on again, all previous settings will be restored automatically.

MAINTENANCE

Cleaning of Dust Protective Air Filter

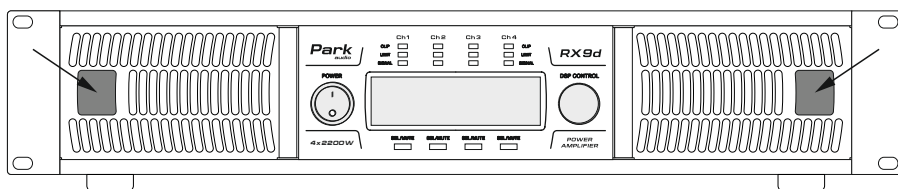
No special tools are required for removing the filter.

Filters are located under the cover grills on the front panel. To remove the cover, take the edge of the hole with your finger (shown in the figure below) and pull it toward. The locking latch must be unlocked. After that, carefully remove the cover and the filter. A heavily dusted filter can be washed in any synthetic detergent, thoroughly rinsed and dried.

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.



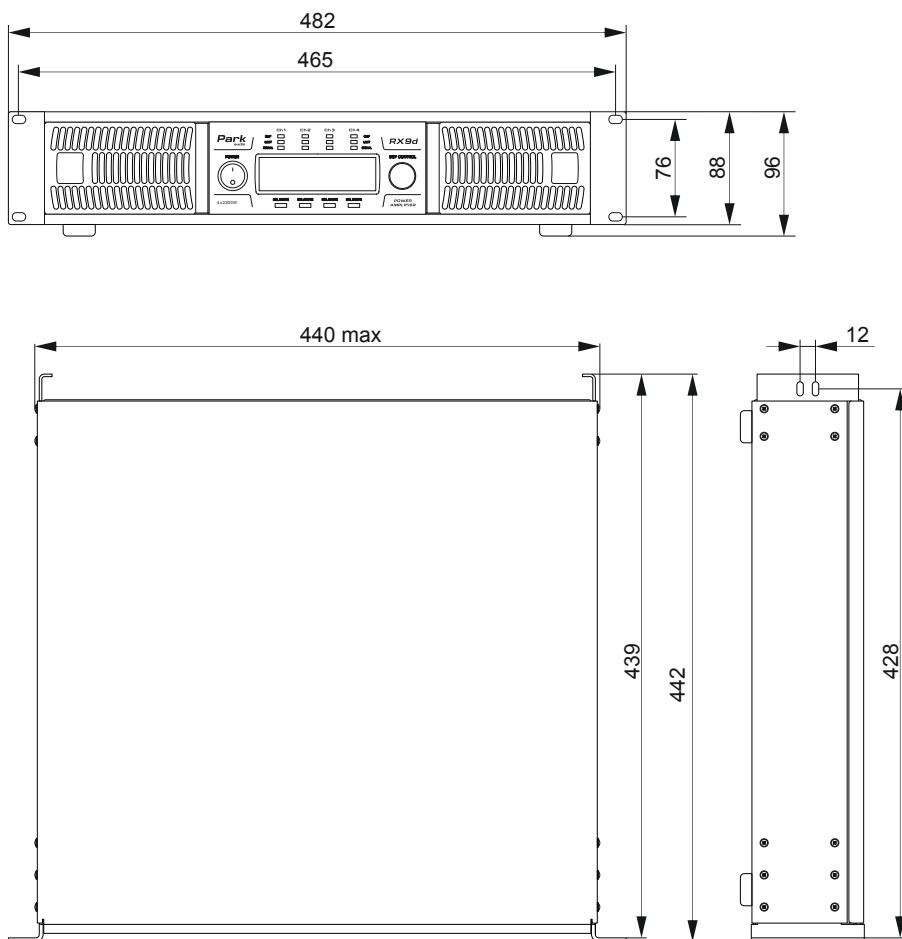
SPECIFICATIONS

Output Power:	
– 2-2.7 Ohm	4 x 2500W (~230V)
– 4 Ohm	4 x 2200W (~230V)
– 8 Ohm	4 x 1200W (~230V)
Peak Output Voltage	168V
Frequency Responce	20 Hz – 20 kHz (± 0.5 dB, Pnom.)
Total Harmonic Distortion	0.02 % (20 Hz – 20 kHz)
Slew Rate	60V/μs
Damping Factor	600 (1 kHz, 8 Ohm)
Crosstalk	60 dB (1 kHz)
Signal-to-Noise Ratio	100 dB (unweighted)
Input Impedance	10kOhm (balanced)
Gain	35 dB
Power Requirements	~230 V, 50/60 Hz
Weight	12kg
Dimensions	482mm (W), 96mm (H), 442mm (D)
DSP Parameters	SHARC DSP, 96 kHz sampling rate / 40 bit floating point ADC: 120dB SNR , -100 dB THD/N, +18 dBU Input Level DAC: 120 dB SNR , -104 dB THD/N, +18 dBU Output Level
DSP Functions	Crossovers. 20 PEQ per channel. Delay up to 1.5sec/channel. RMS and Peak Limiters. Two banks of FIR filter (500 tap each) per channel. Speaker library (96 speaker). 92 user presets.

OPERATING CONDITIONS

Air Temperature:	5 ... 50°C
Atmospheric Pressure:	86.6 ... 106.7kPa (650 – 800 MMHG)
Relative Humidity:	less than 80%

DIMENSIONS





Парк Аудио II, Ltd
Украина, Винница
parkaudio.ua
park@parkaudio.ua