

JADSP1250

USER'S MANUAL



peecker sound®

SOUND REINFORCEMENT

CONTROLLED RADIATION

ACOUSTIC RESEARCH

General Information

JADSP1250 is a power amplifier with built-in DSP and white and pink noise generator. It was born to power loudspeaker systems of *JA12*, *JASW12* and *JA4012* Peecker Sound Architectural Acoustics Series, with factory DSP preset dedicated to these speakers and switchable through a hardware switch. The settings of the DSP on board are further adjustable in real time via PC remote control. This system is supplied with limiters dedicated to the specific *JA12*, *JASW12* and *JA4012* Peecker Sound speakers.

Thanks to this type of class D amplifier, weight and volume result limited in order to guarantee an easy transportability.

Applications:

JADSP1250 is used to control a *JA12* dodecahedric source (*with or without JASW 12 subwoofer*) in the measurements of building and architectural acoustics (acoustic insulation, acoustic absorption, reverberation time, impulse responses measurements, acoustic parameters of halls, passive requirements of the buildings) or *JA4012* directional source in the measurements of front wall insulation.

Conformity Declaration



This device conforms to requirements of 89/336/EEC Electromagnetic Compatibility Directive, and concerning 92/31/EEC supplements, and to the requirements of 73/23/EEC Low Tension Directive, and concerning 93/68/EEC supplement.

Rules applied:

EN55103-1 (Emissions)
EN55103-2 (Immunity)
EN60065, Class I (Safety)

Important Safety Instructions



This symbol indicates important use instructions and information which pay particular attention to, for a correct use of this product.



This symbol indicates “dangerous tension” that can cause a risk of electric shock. Pay particular attention and operate with caution.

1. Follow carefully the content of all the documents enclosed to the product and save them for future reference.
2. Observe instructions.

3. Save the package and check that all goods are in excellent conditions.
4. Do not use near water, do not split water or other liquids onto the amplifier. Pay attention not to use with wet hands and feet in water.
5. Do not use near heat sources like radiators, stoves or other devices producing heat.
6. Check that the power cable is undamaged. Do not step on the cable and pay attention not to press the plug.
7. Connect the plug to a ground port. Do not tamper with the plug. If the plug supplied is not compatible with your port, contact an electrician for the replacement.
8. Connect to power means with a tension as high as indicated on the amplifier.
9. Install the amplifier according to instructions.
10. Do not obstruct the air vent.
11. Disconnect in case of thunderstorm and when not used.
12. Connect only according to instructions.
13. Do not connect an input signal exceeding what indicated in the manual.
14. Do not connect the output of the amplifier to the input of another channel.
15. Do not connect an output of the amplifier to any power source like batteries, feeders or mains plug, apart from the fact that the amplifier is on or off.
16. Keep the controls of volume to the minimum during the amplifier switching on or off.
17. Do not move the panel, otherwise there would be a risk of an electric shock.
18. Do not try to repair this product, but contact qualified personnel.
19. Clean only with a dry duster.
20. This product must be handled by qualified personnel when:
 - the power cable or the plug are damaged
 - the product has been exposed to rain or wetness
 - some liquid has got into the unit
 - some object fell onto the unit
 - the unit fell down and was damaged
 - the product seems not to work correctly or shows a remarkable change of performance.
21. A careful supervisory control is necessary, if the product is used in the presence of children or by inexperienced adults.

22. This product might produce levels of sound able to damage hearing. Pay particular attention and do not work at high or uncomfortable levels of volume for long. In case of troubles or loss of hearing, consult an audiometric specialist.



Connection to the Means and Absorbtion

Check that you have power enough for the amplifier (verify the data at the end of this manual). The electric mains voltage must be the same as indicated on the panel of the amplifier.



Pay attention: before making any audio connection remember that it is a goods rule to switch off the amplifier (by turning PowerCon connector anticlockwise) and to keep the level of the input signal to the minimum, during the switching on.

User's Liability



Dangerous Output Tensions

Amplifiers can generate dangerous output tensions. Do not touch the possible uncovered cables of cone loudspeakers while the amplifier is working.



Output Connections

Before connecting an output charge to an amplifier the user stands liable for checking that the connection falls into the specifications of this device in order not to damage the amplifier and/or the charge.

Radio Interferences

A sample of this product was tested and homologated according to the limits of the Electromagnetic Compatibility Directive (EMC). These limits have been fixed to give a reasonable protection from the dangerous interferences of electric devices. If not installed or used according to the present instructions for use, this product might interfere with other devices, for instance radio receivers. Otherwise, the possibility of interferences in a particular installation is not ruled out in any case. If the product interferes with devices of reception and transmission (this condition can be verified by turning the device on and off), the user would have to try to eliminate the interference observing one or more of the following measures:

- Increasing the distance between the device and the receiver.
- Connecting the device to a port placed on a circuit different from the one the receiver is connected to.
- Turning or move the aerial of the reception device.
- Checking that the concerned unit conforms to the EMC immunity limits (it must have the EC brand). All the electric devices sold in EEC must be homologated referring to the immunity from electromagnetic fields, high tensions and radio interferences.
- Contact qualified personnel.

Precautions of Use

Placing:

Open JADSP1250 forming an acute angle between the panel and the lid and position it upright (Figure 1). Remove all the obstructions from ventilation holes.



Figure 1: JADSP1250 in working position

Cooling:

Check carefully the conditions of ventilation/cooling of the amplifier. A forced air inside system, through a variable speed fan, allows the dissipation of heat generated by power components. Check carefully that there is room enough on the front side of the amplifier to allow air to get in and to the hot air to get out. Do not put on objects that could obstruct the ventilation opening.

Customer Service Information:

To ask for maintenance, please contact the PEECKER SOUND Customer Service, Distributor, Dealer, nearest to you, or Sound Corporation (Italy).

Front Panel

The front panel is made of the following elements, numbers refer to the numbered scheme of Figure 2.

1. Fan Control

Clean contact control output to stop the fan of the *UPS-JA-BT* optional device when the JADSP1250 noise generator gets muted.

2. Mute

Red led indicator of noise muting (noise is muted by the radio controller)

3. Active

Green led indicator of inside noise generator activity (activated by button 4)

4. Button for inside generator activating

5. Pink noise / White noise

Button for switching between pink and white noise

6. Level

Potentiometer for reduction of the noise generated level (from $-\infty$ dB to max)

7. USB

USB port for DSP remote control from PC (see paragraph “DSP Remote Control”)

8. Network, Link

Link for network PC control (see paragraph “DSP Remote Control”)

9. Network, Input

Input for network PC control (see paragraph “DSP Remote Control”)

10. Audio, Link

XLR male connector for the link of the signal present in [11.Audio,input] to another device

11. Audio, Input

XLR female connector for the input to the DSP, max 10 dBu (active when noise generator is deactivated)

12. Preset, JA12/JA40

Switch for two factory presets for JA12 dodecahedron (with or without JASW12 subwoofer) and for directional speaker JA4012

13. User DSP, ON/OFF

Switch on and off for the additional processing set by PC control

14. On, Signal, Limit

Indicator leds for power on, input signal presence and limiter engagement (see paragraph “Protection Characteristics”)

15. Output

Power audio output NL4 (4 poles) SpeakOn connector with pinout scheme (see paragraph “Connections”)

16. AC Line Input Mains

PowerCon connector for mains supply from electric mains

17. Fuse

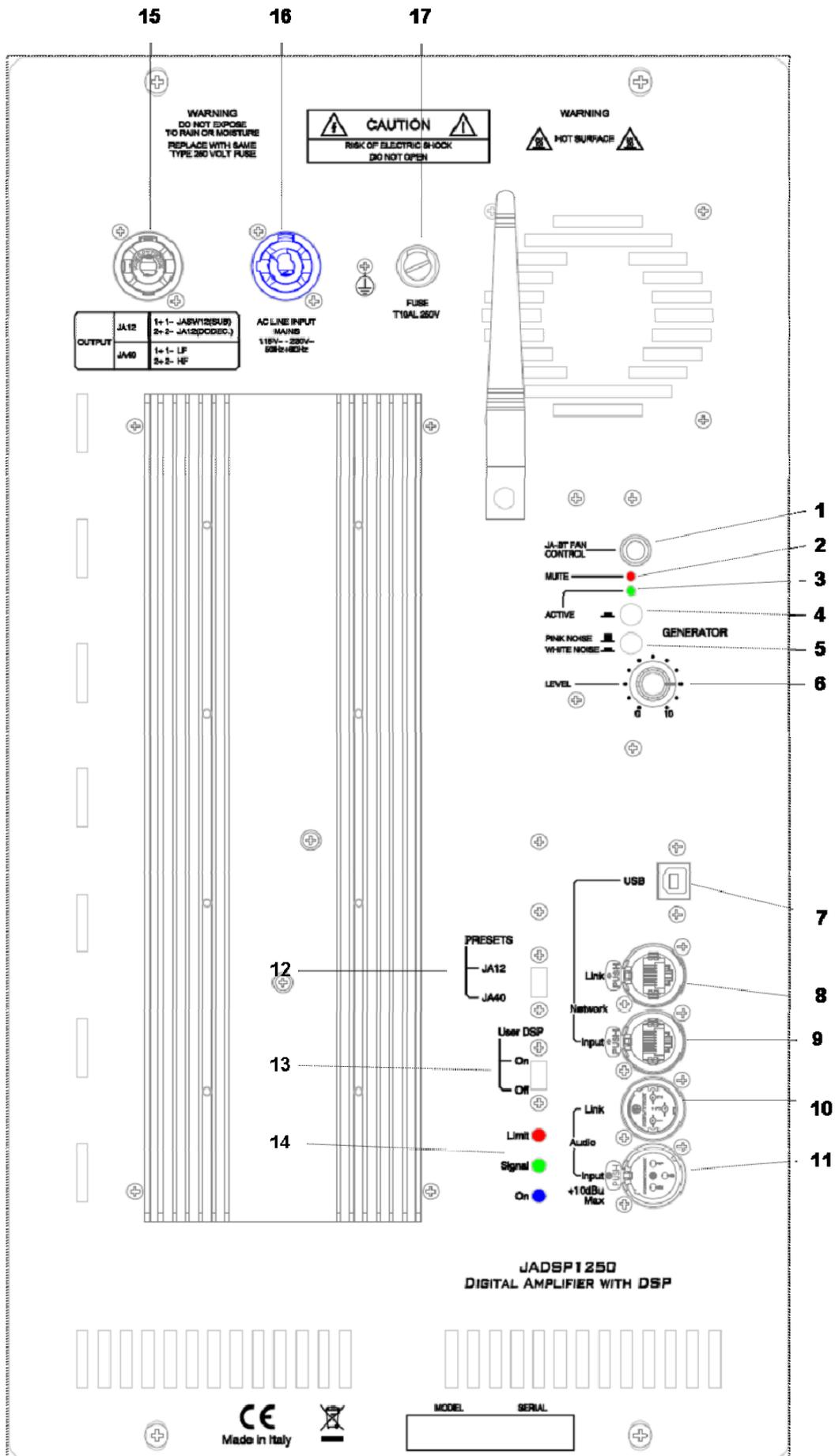


Figure 2: JADSP1250 front panel and numbered scheme

Protection Characteristics

This power amplifier has a long service life thanks to its systems protecting the amplifier and its charge.

Peak Limiter:

It is the last block in the DSP chain (see Figure 10): it is set to prevent the amplifier output signal from exceeding the power peaks that special transducers used can handle. This limiter abates the gain when a threshold is exceeded and it releases this abatement in a brief time. The peak limiter is not disconnectable. Thresholds set on the different outputs and in the different DSP presets are closely united to the special systems of cone loudspeakers this amplifier was designed for, as specified below.

“RMS” Limiter:

It is an analogic limiter placed at the amplifier output with time of analysis and intervention longer than the peak limiter. It works supplementary to the peak limiter and it allows not to exceed the thermal thresholds of power tight of transducers. Exceeding this threshold would cause a proportionate decrease of the gain, that occurs in a hearable way in a few seconds. The gain is reactivated in case of decrease of the input signal. RMS limiter is not disconnectable. The threshold set is closely united to the special systems of transducers this amplifier was designed for, as specified below.

Temperature and Power Value Protection:

This amplifier is supplied with sensors of temperature and it can measure the output power. When one of these values exceeds an extreme value for a certain time, the system protects itself by decreasing the gain. The persistence of the conditions of threshold exceeding would cause the amplifier switch off. The trend of power and temperature values and of all the protection interventions in the last three days of actual use is plotted on a graph on the panel of software DSP control and it can be saved in a numerical format, Figure 3.

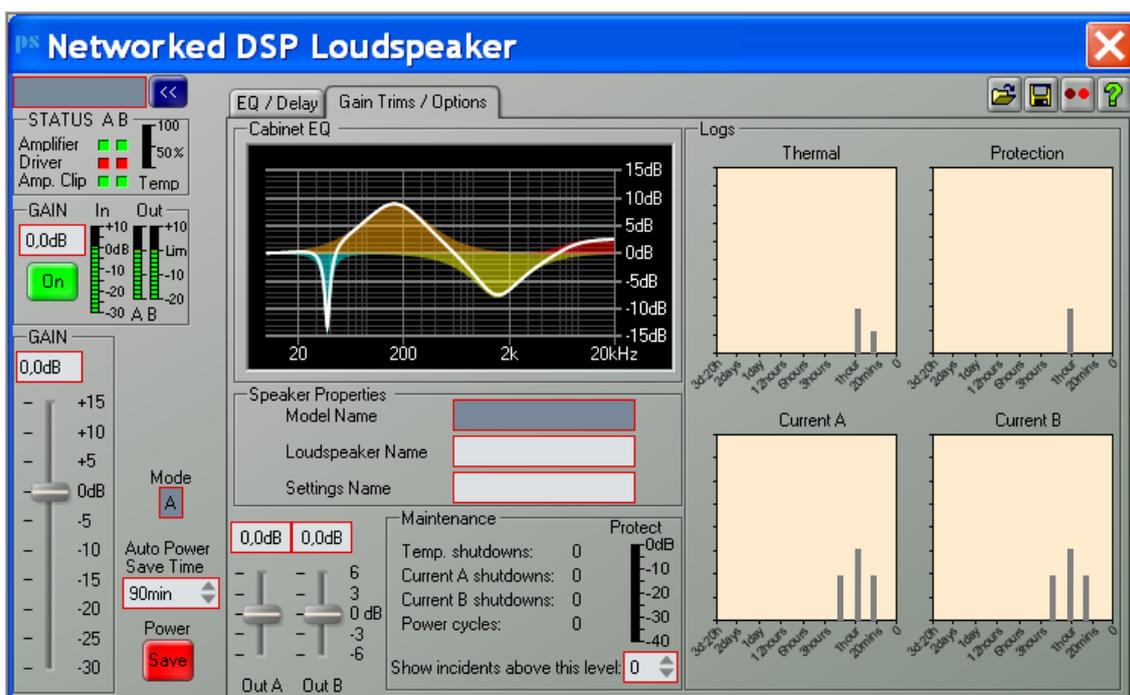


Figure 3: Software of DSP control – Monitoring panel

Charge Safety Control:

The charge is constantly measured and displayed on the software panel if its value exceeds a factory set range.

DC Protection:

The presence of output direct current is monitored: in that case the output stage of the amplifier and the switching power supply would be inhibited. This allows to protect the cone loudspeakers from direct current. It is enough to turn off and restart the amplifier to reactivate it.

Protection from Mains Power:

Mains input is supplied with a limiter for inrush current and fuse (outside) fluxes. System is automatically protected and restarted in case of voltage drop. It is supplied with a system of automatic adaptation to all the values of mains tension included between 115 and 230 V.

Noise Generator

It is supplied with two buttons, one to activate the noise generator (button 4. - Figure 2), the other to select white and pink noise (5. Pink noise / White noise – Figure 2). The green led (3. Active - Figure 2) indicates that the noise generator is on.

By a remote control supplied it is possible to activate the noise muting (that is to stop the generated noise) from a remote place. The noise muting is indicated by the red led (2. Mute – Figure 2). Activating the noise muting causes the switching off of the cooling fan for a few seconds. It allows to perform measures of noise stopping without the disturbing noise of the fan.



Figure 4: JA-BT optional device

With the JA-BT optional device (a battery power kit with an inverter to use the devices without mains – Figure 4), the “JA-BT FAN CONTROL” connector allows to connect JA-BT to JADSP1250 causing the switching off of JA-BT fan while the noise muting is activated. “LEVEL” potentiometer allows to dose the amplitude of the noise sent to the amplifier. With the switch OFF (13. User DSP – Figure 2), that is DSP control off, and the switch 5. set on “pink noise”, turning completely the potentiometer clockwise (highest level) corresponds to the maximum acoustic emission of the dodecahedron, without distortions or any thermal or power protections.

Amplifier and DSP

Input Stage:

The female XLR connector (10. Audio, input – Figure 2) allows to send an outside signal straight to the input of the DSP by-passing the inside noise generator. The input is possible only when the noise generator is off (button 4. turned up – Figure 2).

The male XLR connector (11. Audio, link – Figure 2) allows to make the *talk through* of this signal to another device.

The yellow (“On”) and green (“Signal”) leds indicate respectively the ON status and the presence of the DSP input signal (whether it comes from the inside generator or from outside).

The red led indicates one of the following possible status:

- saturation of the DSP input AD converter
- intervention of the DSP peak limiter
- intervention of the “RMS” limiter on the output of the amplifier
- amplifier clip

It is possible to better detect which of these particular events is occurring by monitoring the DSP via PC remote control. To that end please refer to the paragraph “DSP Remote Control– Software” and to the Help on-line of the PS-NET Network Controller software.

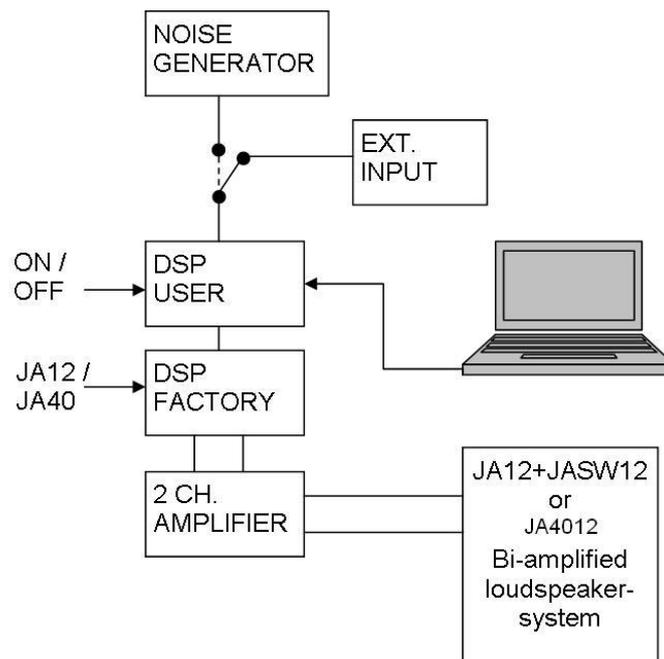


Figure 5: JADSP1250 General Scheme

Switch for DSP Control:

The DSP on board is supplied with presets straight switchable from the hardware panel. A main switch named “PRESETS” allows to switch the correct audio sets-up for:

- 1) JA12 dodecahedron (with or without the JASW12 subwoofer dedicated) – PRESET named JA12
- 2) JA4012 speaker for front insulation measurements – PRESET named JA40

These two presets are factory set at the time of delivery and the user cannot modify them. Audio sets include frequency cuts and the correct limitations for the particular systems of loudspeakers which can be connected.



The intervention thresholds of the limiter are different for these two core presets, because they are made to power specific and different speakers: it is very important always to set the right preset for the connected system of loudspeakers to get the correct sound by the different speakers, but above all not to damage them.

A second switch named “DSP User” allows to activate an additional DSP processing to the two core sounds. The parameters of this filtering are modified via PC remote control and can be saved in file (.dse). With the “DSP User” switch set to “On”, the current audio set (if the PC is connected) or the audio set at the last disconnection of the PC is activated. With the “DSP User” switch set to “Off” the additional filter is deactivated and the sound heard refers to the core presets. See paragraph “DSP Remote Control” for more details. For further explanations please refer to Figure 5.

Amplifier:

The two channel amplifier is made with switching technology and it can give 1250 W per channel into 2 Ohm impedance. In case of use with the JA4012 speaker for front insulation measurements, the two channels are used to amplify respectively the transducers for low and high frequencies, that is in bi-amplification mode. With the JA12 dodecahedron channel 2 is used for the dodecahedron and channel 1 for the JASW12 subwoofer; the subwoofer can be disconnected.

Connections:

A 4 poles female SpeakOn connector is supplied for the power audio output, with the following pinout (Table 1), depending on the preset switched:

PRESET	OUTPUT 1+ 1-	OUTPUT 2+ 2-
JA12	JASW12 (if present)	JA12
JA40	JA40 LF	JA40 HF

Table 1: Amplifier output pinout

A 4 poles **adpater cable** is included in the package with male and female SpeakOn connectors (Figure 6).

It must **be always connected to the JA12 dodecahedron** and it is for adapting the JA12 inside connections to the pinout described in Table 1 (This adapter turns JA12 into a sole input on pins 2+ 2- with 3 Ohm impedance, suitable for JADSP1250 amplifier, by connecting in parallel two 6 Ohm inputs natively supplied).



Figure 6: Adapter cable for JA12



Pay attention never to connect the adapter cable straight to the JADSP1250 amplifier. It is very important always to connect the JA12 adapter cable in cascade to the usual 4 poles cable, not the subwoofer signal to be wrongly sent to some transducers of JA12 and damage them. After the first use of the JADSP1250 - JA12 couple it is suggested to leave the adapter cable connected to the dodecahedron for the following uses of JA12 and to consider it an integral part of it.

Therefore the following output connections are possible:

- only JA12 dodecahedron (preset “JA12”): 4 poles speakon cable, plus adapter cable (always to leave connected to the dodecahedron) (Figure 7)
- JA12 dodecahedron plus 40SW12 subwoofer (preset “JA12”): 4 poles speakon cable between JADSP1250 and subwoofer, and link via 4 poles speakon plus adapter cable (always to leave connected to the dodecahedron), between JADSP1250 and JA12 dodecahedron (Figure 8)
- JA4012 speaker for front wall insulation measurements (preset “JA40”): 4 poles speakon cable (Figure 9).



Figure 7: Connections to amplify only JA12. PRESET: "JA12"
 Figure 8: Connections to amplify JA12 plus JASW12 subwoofer. PRESET: "JA12"



Figure 9: Connections for JA4012 directional source. PRESET: "JA40"

DSP Remote Control

Hardware connections for Remote Control:

The USB connector allows to make the remote control of the DSP, to be more exact of the part of the DSP dedicated to the user's control, as explained above. To do it, it is necessary to install the *PS-NET Network Controller* software, available in the enclosed CD (see the following paragraph).

The two EtherCon connectors are useful only in presence of other Sound Corporation products with DSP on board, like *X-Treme* amplified speakers and processors. They must be supported by *XT-NETINT* additional device. It allows to create a protocol on CAT. cable (with RJ45 connectors) and to connect several products with DSP in cascade up to a one kilometer cable, as it can singularly operate on each of them from the *Network Controller* software.

Software

For the remote control it is necessary to install on a Windows PC the PS-NET *Network Controller* software available in the enclosed CD. This system works well also on Apple Computer as long as Windows is installed through Boot Camp or Leopard. To work, this software must be supported by *Microsoft DotNetV2SP1* framework, available in the enclosed CD, if it is not already installed on your PC.

The remote control allows the user to use an input filtering (Figures 4 and 9): therefore it must be considered additional to the two factory presets, and it is activated by switch 13 *User DSP* (Figure 2) (regardless of the factory preset selected by the other switch). It allows to get signal muting, gain, equalizations (8 bands and 2 shelvings), LP and HP frequency cuts, delay and two unrelated level attenuations on two output channels. The DSP scheme is in Figure 10. The software panel of remote control is in Figure 11.

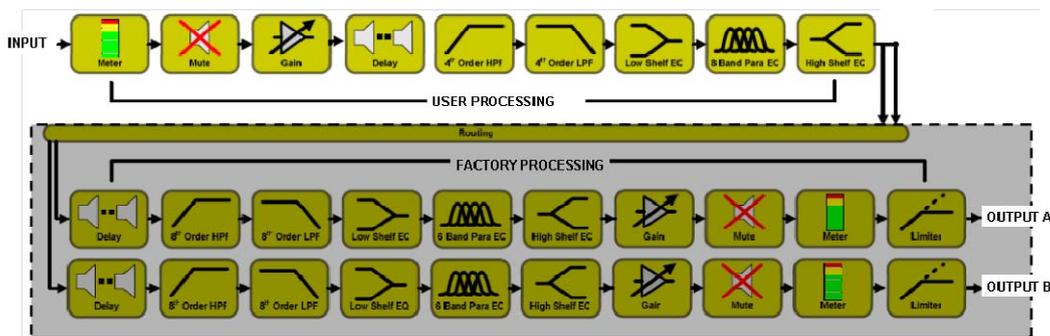


Figure 10: DSP scheme.

The grey part is not visible and can be modified only by switching one of the available presets.

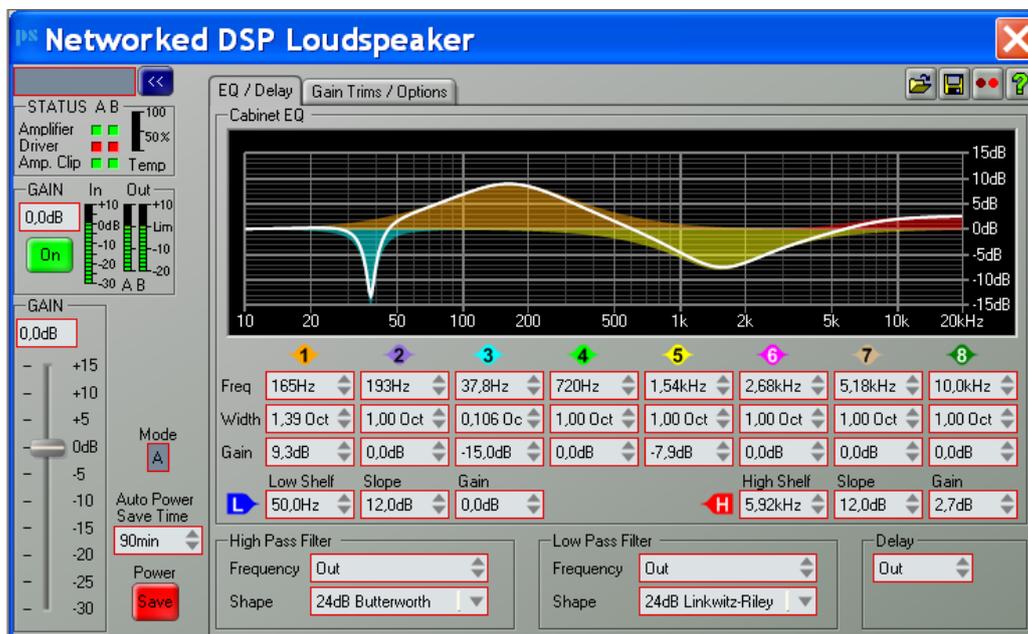


Figure 11: Software panel for user's DSP control

How to connect:

Install the USB driver available in the enclosed CD too. Connect the USB cable to the PC and JADSP1250 ports and start the Network Controller up. To log on select from menu Networks -> Add networks and select the USB port found. Then click on the red triangle that will become green after the connection has been established. The Network Controller is supplied with a Help on-line for all the possible operations.

TECHNICAL SPECIFICATIONS

DSP+Amplifier

Input impedance: 5.5k Ohm unbalanced 11k balanced
 Max Input level: +10dBu
 Output noise : -113dB A-weighted, referenced to maximum output (22kHz bandwidth)
 Distortion: <0.05% @ 1kHz -3dB output (22kHz BW)
 Frequency response: <10Hz - >20kHz +/- 0.25dB <5Hz - >30kHz +/- 1.0dB

Amplifier Section

Circuitry Class D
 Number of channels: Two
 Output power (program): 1250W RMS / ch. 20Hz-20kHz both channels driven into 2 Ω
 Slew rate: >80V/us
 Damping factor: 120 ref 8 Ohms
 Efficiency: >90% typical

DSP

Sample rate: 96kHz
 Frequency Resp: 20Hz - 20kHz+/-0.5dB, 10Hz - 40kHz +/- 1dB
 Dynamic range : 110dB A (20Hz - 20kHz)
 THD (20Hz–20kHz): <0.01%
 Panel switches: 2 switches: JA12/JA40 speaker selector, PC control on/off
 PC control software: PS-NET Network Controller

Noise generator

Panel Controls Activation and mute keys, pink/white switch, level knob

Amplifier protection systems

Over Current: Initially limiters applied, persistent over current causes shutdown
 Temperature: Initially limiters applied, persistent over temperature causes shutdown
 Brownout: Automatic protection & recovery
 Mains: Inrush current limiting
 DC fault: Shut down power cycle to recover
 Indicators and switches: Three LED: Power, Signal, Limit.

Load protection systems

JA12+JASW12 speaker system: DSP peak limiter + analog thermal limiter
 JA4012 speaker system: DSP peak limiter + analog thermal limiter

Connectors

Amplifier Input Connector Neutrik® XLR (Male)
 Amplifier Link Connector Neutrik® XLR (Female)
 Amplifier Output Connector Neutrik® NL4FC speakON
 AC Power Connector Neutrik® powerCON
 PC control USB type B
 PC Network Control EtherCon input, EtherCON link

Power Supply

Type: High current, high freq. switch mode
 Efficiency: >90% typical
 Input voltage: 115v / 230v nominal +/- 10%
 Input voltage selection: Automatic
 Mains frequency range: 45 - 65Hz
 Mains fuse : External, T10AT type recommended
 Other features: Automatic soft-start, automatic brownout recovery, automatic over-voltage protection, remote shutdown, automatic power-save

Thermal

Semiconductor cooling: Conduction through base of module to an attached panel.
 Internal cooling method: Convection (Assisted by a small internal low-speed Fan).

Physical

Height: 510 mm
 Width: 290 mm
 Depth: 240 mm
 Weight: 4,7 kg