Connections on AA-40a audio amplifier

Front plate features, left to right:

- Power inlet
- Audio IN, 3,5mm stereo socket
- Power LED and Clip LED
- Input gain adjustment
- Microphone (auto volume control)
- Dip switches for low or high input gain and ambient dependent volume control on / off
- Volume down
- Volume Up

Audio source is connected to the audio IN socket with a 3,5mm stereo jack. Audio source maybe any source with output level from 50mV to 2V.

External 24V AC power source is connected to the power IN connector. Use only the power supplies listed in technical description.

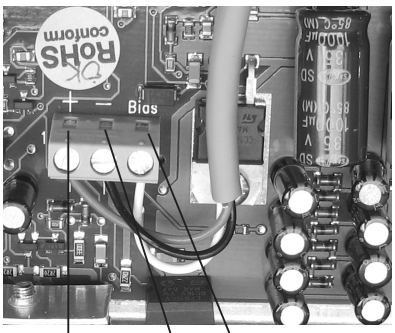
Dip switches

The two dip switches are used to choose between low and high input gain and ambient volume control on or off.

1	2	DIP SWITCHES 1 input gain 2 ambient ctrl	
●	●	1-up 2-up	HIGH INPUT GAIN AMBIENT CTRL OFF
●		1-up 2-down	HIGH INPUT GAIN AMBIENT CTRL ON
	●	1-down 2-up	LOW INPUT GAIN AMBIENT CTRL OFF
●	●	1-down 2-down	LOW INPUT GAIN AMBIENT CTRL ON

Speaker cable connection

Speaker connections are only to be done by a skilled person. Speaker cable is connected inside the enclosure. Always disconnect power supply before opening the enclosure! To open the enclosure remove the enclosure cover screws from front plate and gently slide the cover off. Connect the speaker cable to the screw terminal inside the AA-40a. Use class two wiring. Panphonics recommends using double shielded cable with three leads. AWG 24 or lower which corresponds to individual leads cross sectional area of 0,22mm2 or higher.



Red audio (+) | Black audio (-) | White bias

Be sure to connect the bias voltage wire only to the bias voltage terminal on the right side terminal in the above picture (Short circuit or overload will damage the electronics). Do not strip the wires more than necessary to make a secure connection. Make sure all the wire ends are securely inserted into the terminals.

Use e.g. a plastic tie band around the cable for pull prevention (circled above). After making connections carefully close the enclosure.

Connect to Panphonics audio elements and Panphonics loudspeakers only. Connect the mains power only after all other connections are made and checked.

Using the AA-40a

After the amplifier is installed and all the connections are made it may be put into use.

Adjusting input gain

To get the maximum level out of the AA-40a without overdriving it or causing distortion to the sound, follow this procedure to set the input sensitivity of the AA-40a to an optimum level. This is only done when the amplifier is set up for the first time or if the driving device is changed to another model.

1. Adjust the volume of the driving device (pre amplifier, mixing console, CD-player etc.) to its maximum setting. If it is known that some lower volume setting will be the maximum used, adjust the source to this volume setting.
2. Adjust the volume on the AA-40a to the maximum by pressing the volume up button repeatedly until the volume level does not increase anymore. One press of a volume button will adjust volume by approximately 0,75dB.
3. Adjust the input gain of the Panphonics AA-40a amplifier so that the clip led flashes only randomly during playback. If the clip led flashes continuously or is lit, adjust gain to a lower value. To increase gain turn the adjustment screw clockwise. Do not use excessive force.
4. If the input is clipping and the sound is distorted even with very low gain setting, switch the input sensitivity dip to the low position. The AA-40a has two input sensitivity levels that are chosen with the left dip switch.

When gain is correctly set the Panphonics AA-40a amplifier will not clip even when driven with maximum volume setting of the driving device. Correct gain setting will give out maximum voltage to the loudspeaker or audio element(s) thus giving maximum SPL without distortion.

In daily use it is not necessary to adjust gain on the AA-40a. Volume level is adjusted either by the audio source or with the volume adjustment on the AA-40a. Adjusting volume level at the source will affect all the amplifiers driven with that source. Adjusting volume locally with the

The AA-40a amplifier is turned off by disconnecting mains power by removing the power supply unit from the mains socket. Notice that disconnecting the power plug from the amplifier does not disconnect mains power from the power supply unit.

Setting desired volume level

Set the AA-40a to a desired volume level by pressing the volume up and down buttons. The buttons have to be pressed repeatedly, holding the button down will only change the volume by one step. Use the same media that will be played after set-up.

Automatic volume adjustment

The volume level may be automatically adjusted to compensate ambient noise level changes. The automatic ambient noise level monitoring enables keeping the perceived volume at a desired level. This option may be enabled or disabled by using the right hand dip switch on the AA-40a. When enabled the AA-40a will monitor the ambient volume level and adjust the volume level automatically to compensate.

After the desired volume level is set with the volume level buttons on the AA-40a, the AA-40a will measure the ambient noise level during the next pause in the media and use these values as reference. The ambient noise reference will be measured during a 12s period. Best results are obtained when the ambient noise is static during the reference measurement period. The ambient noise reference level will be measured every time after the volume level is adjusted. After the reference ambient noise level has been measured the AA-40a will adjust the volume level if the ambient noise level changes. The ambient noise level is only measured when there is no media played. This is to avoid mixing the audio signal with the ambient noise.

If the used media has no pauses (a few second silences), it is advisable to stop the media for a while after setting the volume level in order for the amplifier to be able to measure the reference ambient noise level.

In case the ambient noise level increases very quickly, the change is discarded by the AA-40a. This is to prevent the AA-40a to raise the volume level during announcements or other short events that suddenly raise the ambient noise level very high for a moment. If the ambient noise level stays at this higher level for over 30 seconds AA-40a will interpret it as a non-temporary change and will adjust the volume accordingly.

To avoid pumping the volume level up and down, the volume level change is restricted to approximately 1,5dB at one measurement loop which corresponds to two adjustment steps (equivalent to two volume button presses).

Fixing the AA-40a amplifier securely

Place the AA-40a amplifier in a dry space. Always install the AA-40a so that it can not fall down on anyone. In order for the ambient control to work properly the amplifier should be placed in the same space with the loudspeaker(s) or audio element(s) it is driving. If placed e.g. in a technical room it can not monitor the ambient noise level by the loudspeaker unit.

Not suitable for in-wall mounting. Clean periodically by wiping off dust with dry or damp cloth.

Placing and using the power supply unit

Place the power supply unit so that it is easily accessible in order to disconnect it from mains power, e.g. do not place the power supply unit behind any structures so that the power supply is hard to reach. The power supply unit is always active unless disconnected from the mains power.

When not in use, disconnect the power supply unit from the mains power by pulling it out of the socket. Place the power supply unit in dry place.

Panphonics AA-40a audio amplifier technical description

Output voltage	Max 40Vrms
Operation principle	Bridged mono
Power supply	External 24V / 400mA AC power supply Use only Nordic Power models A32404C, A32404BC, A32404GC or A32404JC. Plug diameter 2,1mm / 5,5mm (center / out).
Frequency range	200Hz (-12dB/oct.) - 16kHz (-6dB/oct.)
Input impedance (audio IN)	10kΩ
Input voltage (audio IN)	50mV - 2V, adjustable gain Input sensitivity setting for low and high input signals
Input (audio IN)	3,5mm stereo jack
Output connector (audio OUT)	A three (3) slot screw terminal on electronics board. Use Class two wiring. Automatic volume control to compensate changes in ambient noise level
Dimensions	113mm * 80mm * 30mm
Weight	120g
Gain vs. distortion	Max distortion at full gain 0,5% @ 20kHz

IMPORTANT SAFETY INFORMATION

1. The AA-40a active amplifier is designed to be used with Panphonics audio elements only. DO NOT use with any other speakers.
2. Power down and disconnect unit from mains voltage before making any connections.
3. Read all documentation before operating your equipment.
4. Follow all instructions.
5. Do not remove the cover before disconnecting mains power.
6. Make sure power outlets conform to the power requirements.
7. Do not operate the unit on a surface or in the environment which may impede the normal flow of air around the unit.
8. Do not use the unit near heat producing devices.
9. Do not drive the input with a signal level greater than that required to drive equipment to full output.
10. Do not spill water or other liquids into or on the unit.
11. EQUIPMENT SHOULD BE INSTALLED AND SERVICED BY A SKILLED PERSON ONLY.
12. The product label is located on the amplifier enclosure.

For further information or any questions, please contact Panphonics service.

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Terms of Warranty

Panphonics Oy warrants to the original purchaser that this Panphonics Oy's product (the "Product") will be free from defects in materials, design or workmanship, on the following terms and conditions:

Panphonics Oy's Audio Elements have been tested at the place of manufacture in accordance with the quality control of Panphonics Oy. Each notice of defects in the Product will be compared to the quality control record of the said Product. This Limited Warranty does not include deviations in audio performance characteristics of the Product if the performance characteristics entered into the quality control record have been correct and the purchaser cannot provide positive proof to the contrary, for example, inadequate transportation procedures. Panphonics Oy's products are sensitive to mechanical and environmental damage.

1) The period of warranty will be twelve (12) months from the date the original purchaser took possession of the Product, or should have taken possession of the Product if the receipt of the Product was delayed due to a cause attributable to the purchaser. In case the original purchaser sells or otherwise assigns the Product to a new owner/user, the period of warranty will continue unaltered until the end of the original period of warranty.

2) During the period of warranty Panphonics Oy or its authorized maintenance service will either repair the defective Product or replace it with a new Product, at Panphonics Oy's option. Panphonics Oy will return the repaired Product or deliver a new Product to the purchaser in working order. All replaced parts and equipment will become the property of Panphonics Oy.

3) This Limited Warranty does include mechanical defects of the Product and significant deviations between technical data and performance characteristics of the Product.

4) The repaired of replaced Product will not be given extended or additional period of warranty.

5) This Limited Warranty does not include defects caused by normal tear and wear. In addition, this Limited Warranty will not be valid if:

i) The defect was due to

a. The use of the Product either contrary to instructions or otherwise negligently;
b. The Product being exposed to moisture, steam, extreme temperature or environment, or rapid changes in such, or corrosion or oxidation;
c. The Product being altered, connected to another product, opened or repaired without authorization or the Product being repaired with spare parts not approved by Panphonics Oy;
d. The Product being misused or installed incorrectly; or
e. The Product having been in on an accident or been exposed to the elements or spilled over with food or liquid, or been affected by chemical substances or other events beyond the scope of influence of Panphonics Oy, including but without limitation to labor dispute and every other event Panphonics Oy cannot reasonably be expected to overcome, for example fire or other natural catastrophe, war, rebellion, seizure, monetary exchange control, mandatory legislation, orders of authorities, refusal of export license, scarcity of transportation, general scarcity, restrictions in the use of power, and defects and delays of subcontractor's delivery caused by the above-mentioned causes unless the damage has been direct consequence of a defect in material or design or workmanship;

ii) The purchaser has not informed Panphonics Oy or its authorized maintenance service about the defect within thirty (30) days from the occurrence of the defect during the period of warranty;
iii) The Product has not been returned to Panphonics Oy or its authorized maintenance service within thirty (30) days from the occurrence of the defect during the period of warranty;
iv) The serial number of the Product has been transferred, removed or damaged, or any number has been altered or is impossible to read;
v) The defect was caused by the malfunction of an electronic appliance not provided by Panphonics Oy;
vi) The defect was caused as a consequence of the Product being used with an accessory, which was not manufactured, approved or provided by Panphonics Oy, or the Product was connected to such accessory, or the Product was used for other purposes than instructed, or the Product has been connected to such electronic system, which does not operate customarily compared to the normal use of the Product;
vii) The defect was caused as a consequence of an acoustic or electric overloading of the Audio Element.

6) In order to be able to invoke this Limited Warranty, the purchaser must provide either i) readable and unaltered original sales receipt/warranty card, which clearly sets out the name and address of the seller, the date and place of the purchase, the type of the Product and serial number, or alternatively ii) readable and unaltered original sales receipt, which brings out the same information if produced to the seller/supplier of the Product.

7) The purchaser's rights against Panphonics Oy based on defects or defective functions of the Product are limited to this Limited Warranty. This Limited Warranty will supersede all other oral, written, statutory (unless mandatory), contractual and other warranties and liabilities. In no event will Panphonics Oy be liable for unforeseen, incidental, consequential or indirect damages or expenses. Should the purchaser be a company or other legal person, Panphonics Oy will not be liable for direct damages or expenses. Unless contrary to mandatory provisions of law, the purchaser will be finally responsible for product liability.

8) Any amendment or supplement to the terms of this Limited Warranty is binding on Panphonics Oy only if Panphonics Oy has beforehand accepted in writing to the amendment or supplement.

The defective Product must be shipped to Panphonics Oy on the purchaser's expense.

Panphonics Oy
Teollisuustie 13
FIN-33330 Tampere
Finland

DECLARATION OF CONFORMITY

We, Panphonics Oy, affirm that the products manufactured by us fulfill the relevant EU directives:
Low Voltage Directive (LVD) 73/23/EEC and the Directive of Electromagnetic Compatibility (EMC) 89/336/EEC.

Product names Sound Sign, Sound Shower®, Sound Attraction, Privacy Solution

Manufacturer Panphonics Oy, Olarinluoma 16, FI-02200 Espoo, Finland, Tel. +358 9 8193 8560

Espoo, Finland March 2007

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Kimmo Kynnös, Director of Operations

PANPHONICS
Audio Innovations

Bridged Audio Amplifier

AA-40a

Operation Manual v1.0

Product Description

AA-40a has a special feature that monitors the ambient noise level and automatically adjusts the volume level according to the changes in ambient noise. This feature may also be disabled if necessary.

The Panphonics AA-40a one channel audio amplifier is designed for commercial Installations. The AA-40a is designed to produce the needed 40Vrms to drive Panphonics elements at SPL's over 80dB. It is optimized to handle the reactive load of the Panphonics audio element. The active amplifier can be connected directly to a program source, preamplifier or mixing system.

The Panphonics AA-40a audio amplifier is meant to be used as a power amplifier in systems driving Panphonics plane wave audio elements or loudspeakers using Panphonics audio elements. The AA-40a is capable of driving two S60 elements equivalent to a load of 60nF.

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