



Sound Shower® Passive

(SSHP)

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1. PRODUCT DESCRIPTION

The Panphonics Sound Shower™ Passive (SSHP) is a mono loudspeaker with aluminum framing and in order to operate it will need external Panphonics AA160 amplifier. Panphonics Sound Showers™ are ideal for applications where a certain audio footprint is needed. The Sound Shower™ can create a clearly focused audio footprint with high sound clarity and intelligibility. This makes it possible to create audio spaces even in difficult acoustical environments and with minimum disturbance to surroundings. Sound Showers™ have extremely low attenuation allowing audio to reach long distance e.g along tight corridors within horizontal installations.

2. DIMENSIONS AND COLOURS

MODEL	SIZE (L X W X H)		WEIGHT	
	MM	INCH	KG	LBS
SSHP 60X20	601 X 204 X 34	23.6 X 8.0 X 1.3	1.4	3.1
SSHP 60X60	601 X 601 X 34	23.6 X 23.6 X 1.3	3.0	6.6
SSHP 120X20	1195 X 204 X 34	47.0 X 8.0 X 1.3	2.7	6.0
SSHP 180X20	1790 X 204 X 34	70.5 X 8.0 X 1.3	3.6	7.9

Colours: White and Black

Packing:

Single product packing on protective films and cardboard box.

Packing dimensions:

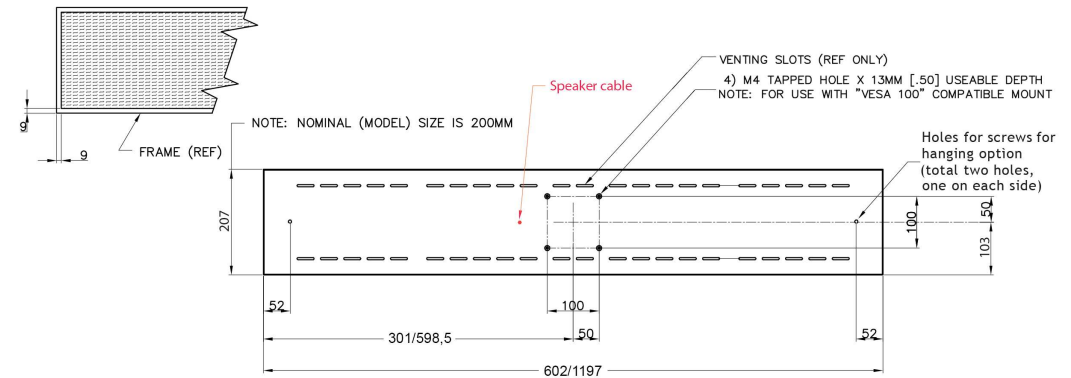
SSHP 60x20: 78cmx24cmx6cm/1,7kg//30.7"x9.4"x2.4"/3.7lbs

SSHP 60x60: 78cmx64cmx6cm/3,7kg //30.7"x25.2"x2.4"/8.2lbs

SSHP 120x20: 135cmx 24cmx 6cm/3,7kg//53.1"x9.4"x2.4"/8.2lbs

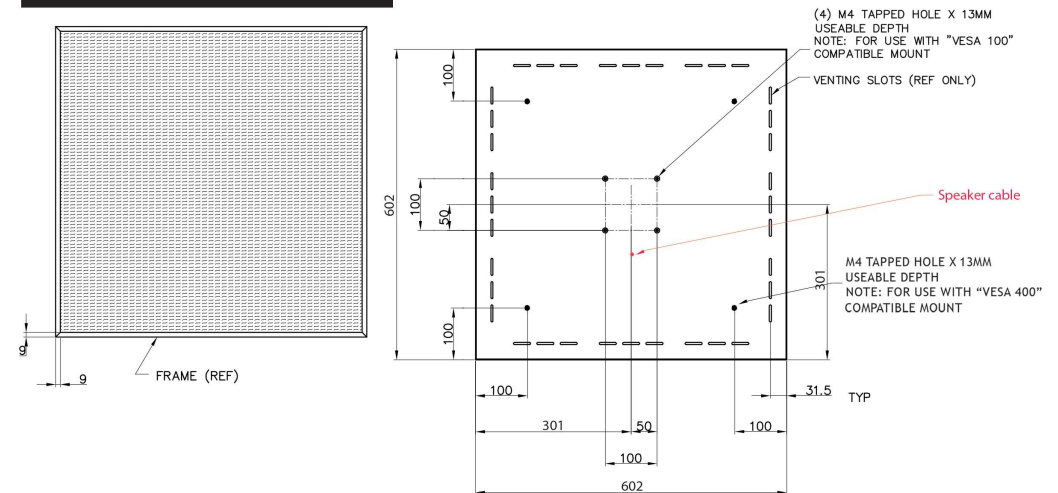
SSHP 180x20: 185cmx24cmx7cm/5kg//72.8"x9.4"x2.8"/11.0lbs

SSHP 60X20 / SSHP 120X20

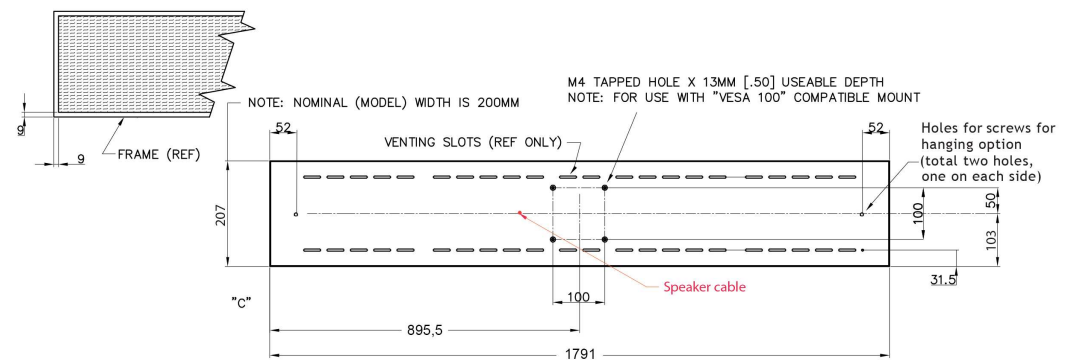


NOTE: APPROX DISTANCE IN WHICH PRODUCT FASTENERS (SCREW HEADS) PROTRUDE

SSHP 60X60



SSHP 180X20



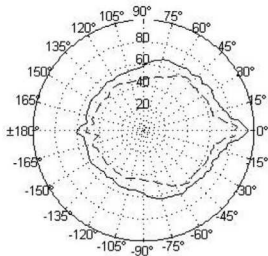
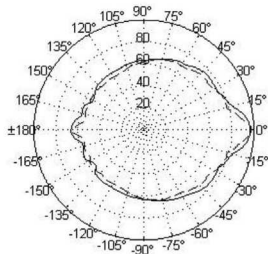
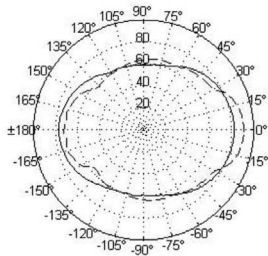
3. SPECIFICATIONS

3.1 Audio footprints

IN UNECHOIC CONDITIONS, FOOTPRINT AREAS (-10DB AT 3M), OPENING ANGLES AND WEIGHTS

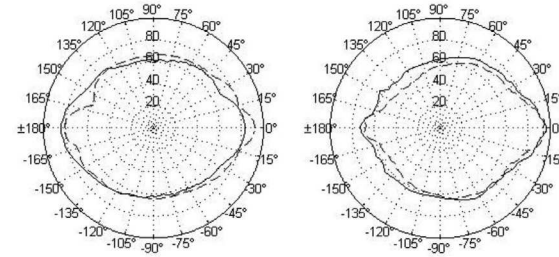
SIZE	FOOTPRINT AREA	OPENING ANGLE	WEIGHT (KG/LBS)
60x20	1.2m x 2.3m		1,4/3.1
60x60	1.3mx1.3m	Aprox. 4° each side	3,0/6.6
120x20	1.4m x 2.3m	Narrow side 4° , Wider side 16°	2,7/6.0
180x20	2.0m x 2.3m		3,6/7.9

SQUARE HORIZONTAL



Octave (Hz)	-10 dB angle
500	47.8
1000	24.8
2000	12.8
4000	8.8
8000	6.8
16000	5.8

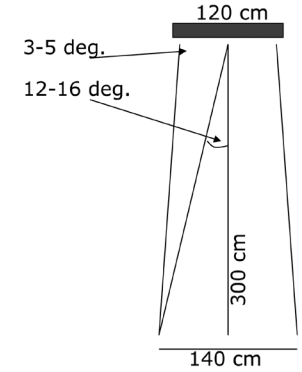
1200 X 200 HORIZONTAL



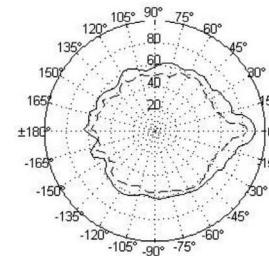
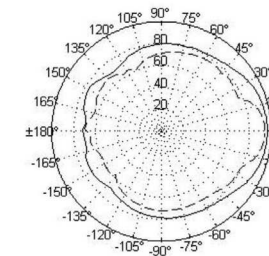
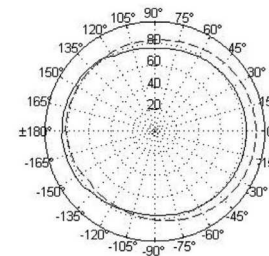
Octave (Hz)	-10 dB angle
500	22
1000	13
2000	16
4000	13
8000	13
16000	12

1200 X 200 HORIZONTAL

Notice the wide area of equal SPL caused by short measurement distance.



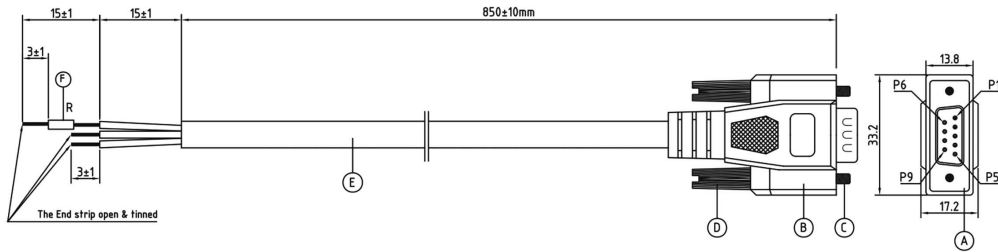
1200 X 200 VERTICAL



Octave (Hz)	-10 dB angle
500	n/a
1000	123.5
2000	41.5
4000	18.5
8000	10.5
16000	5.5

3.2 Electrical specifications

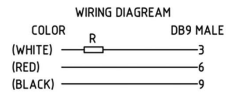
Amplifier connector 9-pin D-sub Connector



SPECIFICATION:

ITEM	PART NAME	MATEIAL	COLOR	QTY
A	DB9-MSN1010LR 9P D-SUB SOLDER*M*BU	P.B	NICKEL	1
B	MODEL TY-383 TYPE	P.V.C	GREY	1
C	TS040X395TNOPO 4.0X395 SCREW	MILD STEEL	NICKEL	2
D	MODEL TY-384 TYPE	P.V.C	GREY	2
E	UL2464 AWG24 (0.20/7TX3C-PVC)X1C 0.04MM	P.V.C	GREY	0.9M
A	RESISTOR 100 K ohm 0.6W			1

NOTE:ALL MATERIALS ARE COMPLIANCE TO "RoHS".



4. PRODUCT LABELS



5. TROUBLESHOOTING

If the sound cannot be heard from the speaker panel,

- Make sure that all the cables have been connected correctly
- Make sure that you are using Panphonics AA160 amplifiers
- Make sure that the amplifier is functioning properly
- Make sure that the media player is turned on and it is functioning properly

signal is fed to the entire element area, no frequency or spatial filtering is included.

Operation of the element is based on porous structure and its permeability to air. The element can be covered and its surface can be patterned applying various materials or techniques. In all cases, the air permeability requirement has to be met.

Do not unnecessarily bend or otherwise stress the element. Pressure can be applied on the element surface only at areas 5 millimetres or less from the edges. Do not cut, pierce or otherwise dismantle or mechanically damage the element structure without first asking for specific instructions from Panphonics technical support.

6. MAINTENANCE

In case the surface of the speaker panel becomes dirty, please use a wet cloth and gently wipe the surface. Do not bleach. Do not use any detergent when wiping.

7. AUDIO ELEMENT

All Sound Showers are based on the Panphonics Audio Element. The Element is an electrostatic transducer. The way it is manufactured, however, places it to entirely different category compared to traditional electrostatic loudspeakers.

The maximum power handling capacity is frequency dependent. The table below shows the maximum signal voltage that can be applied to the element. Note that this voltage may damage the element. An adequate safety margin should be applied.

7.1 Technical description

In the element, a membrane vibrates between two surface layers, the so called stators, in coherence with the input audio signal. The whole input

FREQUENCY (HZ)	MAX DRIVING VOLTAGE (V, PEAK TO PEAK)
100	500
1000	500
5000	500
10 000	500
20 000	300

The element is a capacitive load to the driving amplifier and operates with a special adapter or special amplifier only. It has no magnetic components and does not generate magnetic fields when in use. After operation, the bias voltage remains in the element for 30 seconds.

When used without a short-circuiting system for unloading the bias, one should not remove connectors before that time for safety reasons. CE-approved audio elements have a safety area of 6 mm on the edge of the element. On this area there is no audio signal or electricity.

ELEMENT ELECTRONIC CONNECTIONS AND ELECTRICAL RATINGS:	
Black wire (pin 9)	AUDIO negative
Red wire (pin 6)	AUDIO positive, max. 500v p-p
White wire (pin 3)	BIAS VOLTAGE - 450v dc, max

ELEMENT CAPACITANCE IS 40 nF (for S60, value depending of the element area). Impedance can be calculated with formula $Z=1 / (2 \pi f C)$, where f is frequency and C panel capacitance. The table below describes the amounts of current and power required to drive a 30 nF audio element at frequency dependent maximum voltages given above.

f (Hz)	I (A)	P (VA)
100	0.0044	0.8
1 000	0.0444	7.9
5 000	0.2221	39.3
10 000	0.4443	56.5
20 000	0.5331	78.5

7.2 Acoustic properties

The Panphonics Audio Elements are extremely directive. The directivity is a function of the frequency. At frequencies above 2 kHz, the standard S60 size Panphonics audio elements have directivity of 4 degrees. Because of the directivity and the phase coherence of the produced wave field, the output sound pressure stays at equal level even to long distances.

The element functions best at frequencies from 300 Hertz upwards. The nominal indented operational frequency range for the element is 300 - 22.000 Hz. The Panphonics audio elements have good quality of sound with very low harmonic distortion. The element has precise impulse response, enabling variety of applications and easy modifications to any specific use.

Maximum continuous sound pressure level is 95 dB, peak SPL being 108dB@8kHz / 3% THD, measured with element version 1.21.

Every doubling of the element surface area increases the produced audio energy with 3 dB. At the same time the frequency range is extended towards lower frequencies. With Panphonics technology, the increase in area increases also the directivity of the low frequencies. Because of optimised use of active area, installing elements side-by-side creates

the same acoustical effect as having one element of the size and shape of the collage. As the audio output is created over the whole area of each element, no boundary effects such as high frequency comb filtering are detected.

7.3 Requirements for the amplifier

Like all electrostatic loudspeakers, Panphonics Audio Element appears as capacitive load to an amplifier, contrary to a conventional magnetic loudspeaker, the so-called dynamic loudspeaker, which is a resistive load. The element also requires bias voltage, which is not provided by typical audio amplifiers.

Resistive load dissipates power as heat. A capacitor stores electrical energy instead of converting it to heat. Capacitive load is highly reactive, which means that it sends the stored electrical power back to the amplifier when signal reverses polarity. This tends to cause problems to normal analogue amplifiers.

The power requirement of the Panphonics Audio Element can not be directly compared to that of a magnetic speaker. When driving an electrostatic loudspeaker, the amplifier has to handle a different relation between voltage and current than when driving a dynamic loudspeaker and the power requirement is highly frequency dependent. Therefore, one can not evaluate the ability of

an amplifier to drive an electrostatic loudspeaker by its power rating. With a certain degree of simplification, an electrostatic element can be said to run on voltage instead of wattage.

7.4 Environmental

The element as such is indented to indoor use, with operating temperature range from -10 to +70 degrees Celsius. Depending of other environmental conditions, such as humidity and mechanical stress, the range may be extended remarkably. In the operating environment the humidity combined with high temperatures should not rise above 70 % non-condensing. High heat and humidity may cause irreversible damages to the element. Same restrictions apply also to the storage environment of the element.

The element as such has ingress protection classification IP30. It has survived operational in very demanding environmental test sequence following the standard SAEJ-1885kJ. For more details, please contact Panphonics technical support.

7.5 Patents

The product is protected by one or more of the following patents or patent applications:

EP 0883972, JP 4138004, JP 4312821,
US 6483924, CN ZL200880005581.0,
JP 5568313, US 9,301,055,
CN ZL200980113569.6, JP 5685524,
US 8,565,454, EP 1226741, FI 116605,
JP 4809561, EP 1010166, JP 4256935,
US 6711267

8. EU CONFORMITY

PANPHONICS

EU DECLARATION OF CONFORMITY

1. **Product models: Sound Shower Passive, Sound Shower Compact**
2. **Panphonics Oy**
Luomannotko 3
02200 Espoo
Finland
3. **This declaration of conformity is issued under the sole responsibility of the manufacturer.**
4. **Object of the declaration:**
Equipment: **Passive electrostatic loudspeaker**
Brand name: **Sound Shower**
Model/type: **Sound Shower Passive, sizes 60x20, 60x60, 120x20, 180x20, Sound Shower Compact**
5. **The object of the declaration described in point 4 is in conformity with the relevant Community harmonisation legislation:**
Low Voltage Directive (LVD) 2014/35/EU
Electromagnetic Compatibility Directive (EMC) 2014/30/EU
6. **References to the relevant harmonised standards used, or references to the specifications in relation to which conformity is declared:**
IEC 60065:2014 + A11:2017
EN 55103-1:2009 + A1:2012
EN 55103-2:2009

7. **Signed for and on behalf of:**

Helsinki, 14th of May 2018

Manufacturer: Panphonics Oy



Matti Kontu, CEO

Directives and regulations involved: 2014/35/EU (LVD), 2014/30/EU (EMC), 2012/19/EU (WEEE), 2011/65/EU (RoHS)

2012/19/EU (WEEE):

Panphonics Oy is a member of the ICT Producer Co-operative -TY as of January 24th 2007. Panphonics Oy has been registered in the producer co-operative's membership register under the number 2306. Company's membership information has been forwarded to the Finnish Authorities. ICT Producer Co-operative-TY

has been registered as a WEEE compliance scheme in the Pirkanmaa Centre for Economic Development, Transport and the Environment Producer register under the number PIRELY/555/07.00/2010.

2011/65/EU (RoHS):

Parts are defined and manufactured to meet RoHS-compliance.

Product Customs Codes:

cn-code 85184080

9. 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 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.

1) The period of warranty will be twenty-four (24) 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) This Limited Warranty is valid and enforceable only in the following states:

European Community, Norway, Iceland and Switzerland.

3) 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.

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

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

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

- l) 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 with corrosive materials, liquids or gasses

or other way highly corrosive environment;

- 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 labour 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.

7) 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.

8) 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 it is contrary to mandatory provisions of law, the purchaser will be finally responsible for product liability.

9) 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.

10. WARNINGS AND DISCLAIMERS



This symbol on the product means there is uninsulated, dangerous voltage within the product enclosure that may present a risk of electrical shock.



Only suitable for use at non-tropic climate areas



Only suitable for use at areas with altitude less than 2000m



This symbol means the product must not be discarded as household waste, and should be delivered to an appropriate collection facility for recycling

11. IMPORTANT SAFETY INFORMATION

1. Panphonics speakers are designed to be used with Panphonics amplifiers only.
2. Disconnect the amplifier from main voltage before making connections to speakers.
3. Read all documentation before operating your equipment.
4. Do not use the SSCP speakers near high heat or moisture-producing devices. Device is for inside use only.
5. Do not spill water or other liquids into or on to the power supply and amplifier.
6. When using M4 threads with VESA brackets, please use all the four threads for mounting. Not using all the four threads may cause damages to the threads.

12. CONTACT INFORMATION

Mailing address for correspondence:

Panphonics Oy
Luomannotko 3
02200 ESPOO
FINLAND

Admin

info@panphonics.com
+ 358 45 6610061

Homepage www.panphonics.com

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PANPHONICS

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www.panphonics.com



Sound Shower[®]
AA160 Basic Active

(SSHA6060 and SSHA12020)

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1. PRODUCT DESCRIPTION

The Panphonics Sound Shower™ Active (SSHA6060 and SSHA12020) is a mono loudspeaker with aluminium framing and with integrated Panphonics AA160 Basic amplifier. Sound Shower Active can be connected directly to a media player, preamplifier or mixing systems with RCA cables. Panphonics Sound Showers™ are ideal for applications where a certain audio footprint is needed. The Sound Shower™ can create a clearly focused audio footprint with high sound clarity and intelligibility. This makes it possible to create audio spaces even in difficult acoustical environments and with minimum disturbance to surroundings. Sound Showers™ have extremely low attenuation allowing audio to reach long distance e.g along tight corridors within horizontal installations.

2. OPERATION

Install Sound Shower securely using suitable brackets. There is VESA-100 compatible bracket attachment on backside of the product. Connect and secure all cables before connecting the 24V PSU to mains. Aim Sound Shower front plane towards intended listening area.

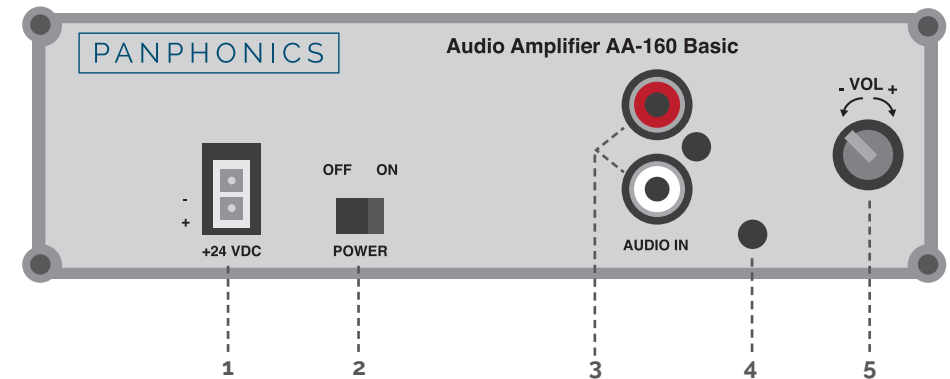
After connecting PSU to mains switch the power ON. The green Power LED is light. Audio media may be played and volume level increased or decreased to suitable level by Volume Control knob. Red Clip LED is indicating when maximum signal level is reached and amplifier is at the edge of clipping. It is not recommended to exceed this limit in continuous use.

How to set up volume:

1. Place Panphonics speaker to the desired spot
2. Measure the ambient noise level of the installation site, using a decibel meter (available free smartphone apps i.e.g. Android: "Noise Meter" iPhone: "Decibel 10th")
3. Connect the media player to the amplifier and set mediaplayers volume at it's max and use the amplifiers volume knob for trimming the sound 3-5 dB (max 10dB) higher than the ambience. Measure the volume level from the sopt where the actual user would be hearing the audio. This should give a good directivity and loud and clear enough audio.

Use volume control carefully and protect other persons comfort and hearing: because of high directivity there may be local high sound pressure levels in front of loudspeaker not heard from side areas!

3. CONNECTIONS & CONTROLS IN AA-160 BASIC AMPLIFIER



1. Power input connector

Input for the provided power supply.

2. Power switch

Manual switch to turn the amplifier on and off.

3. RCA input

Input for unbalanced connections. The connector is summed to mono internally. When connecting a media player set the media players output volume (when adjustable) as high as possible without causing any distortion to the AA-160 Basic amplifiers input stage. If the full volume setting

causes distortion to the input of the AA-160 amplifier, lower the media player output volume. Set the final output volume by using the AA-160 Basic amplifiers volume knob (#5)

4. LED signal light

Green light informs that the amplifier is functioning properly at an appropriate volume level. Red light informs that the amplifier's volume level is set too high.

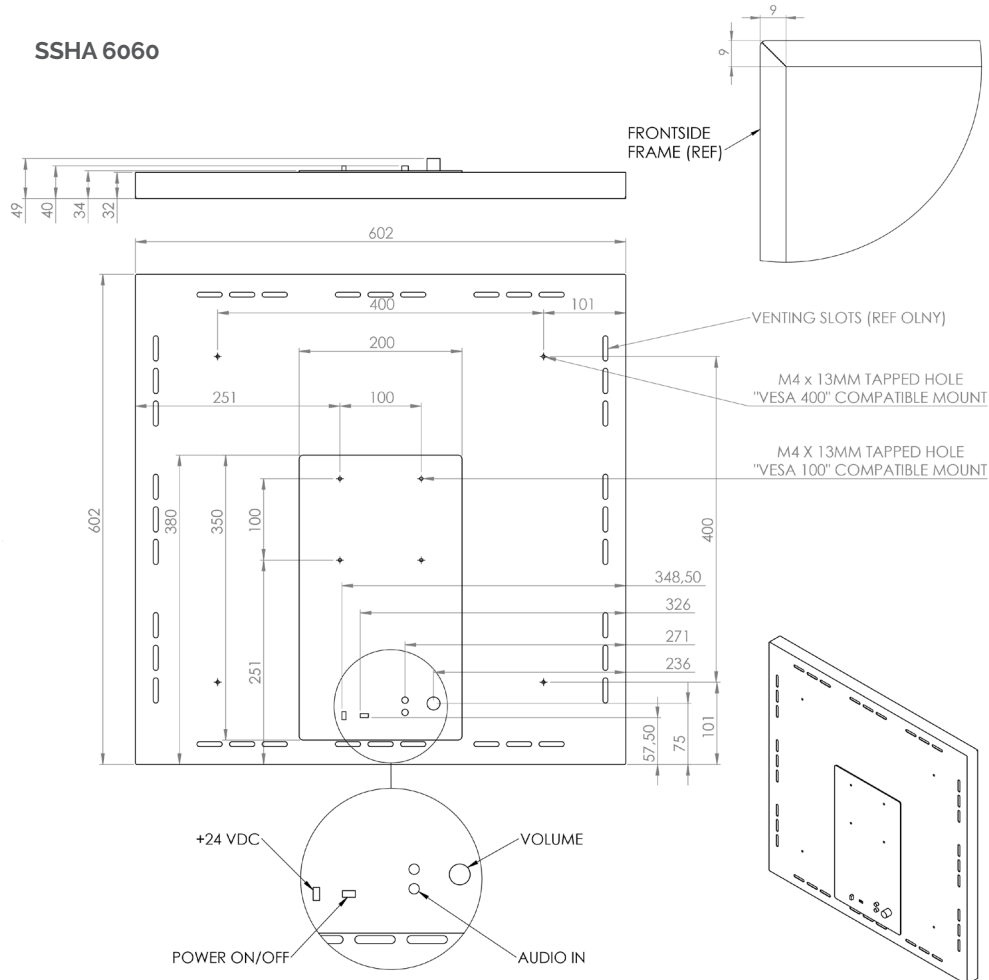
5. Volume knob / standby switch

Rotate to adjust the output level of the AA-160 Basic amplifier.

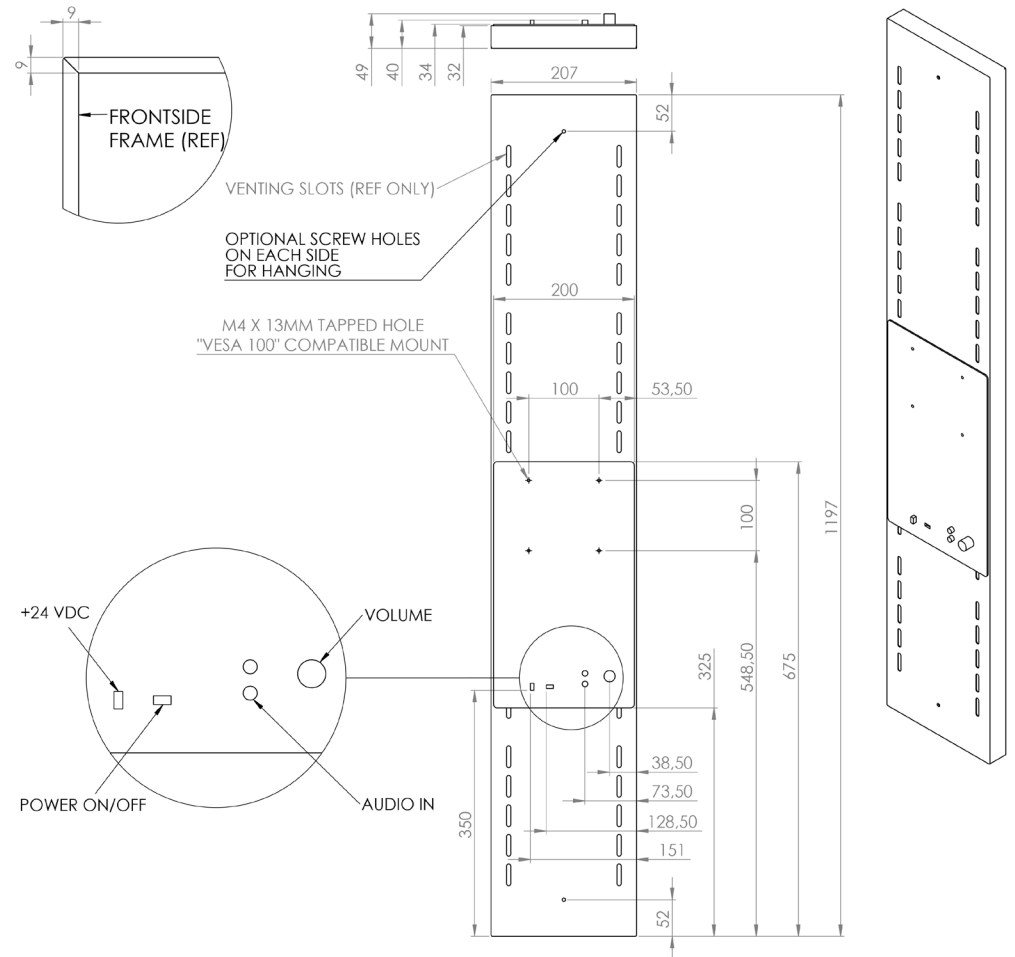
4. DIMENSIONS AND COLOURS

MODEL	SIZE (L X W X H), +/- 2MM		WEIGHT	
	MM	INCH	KG	LBS
SSHA 6060	601 X 601 X 55	23.7 X 23.7 X 2.15	3.4	5.5
SSHA 12020	1197 X 206 X 55	47.1 X 8.1 X 2.15	2.9	4.5

SSHA 6060



SSHA 12020



Colours: White and Black

Electrical connections and controls, indicator LED's and attachments are located on the back side of product.

Packing:

Single product packing on protective films and cardboard box, PSU included.

Packing dimensions:

SSHA 60x60 - 73cm x 62cm x 6cm / 4,5kg // 28.7" x 24.4" x 2.4" / 9.9lbs

SSHA 120x20 - 138cm x 23cm x 6cm / 4,0kg // 54.3" x 9.0" x 2.4" / 8.8lbs

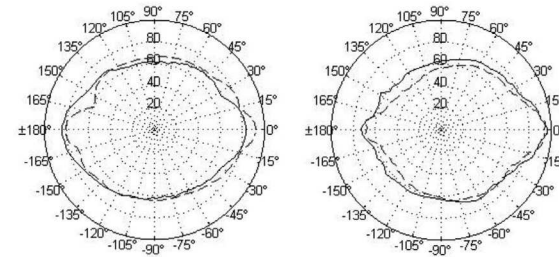
5. SPECIFICATIONS

5.1 Audio footprints

IN UNECHOIC CONDITIONS, FOOTPRINT AREAS (-10DB AT 3M) AND OPENING ANGLES:

SIZE	FOOTPRINT AREA	OPENING ANGLE
60 x 60	1.3m x 1.3m	Aprox. 4° each side
120 x 20	1.4m x 2.3m	Narrow side 4°, Wider side 16°

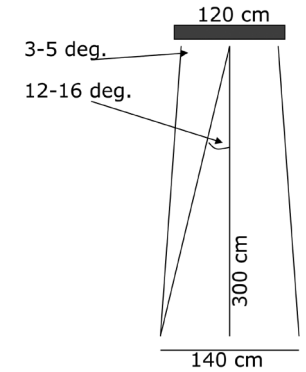
1200 X 200 HORIZONTAL



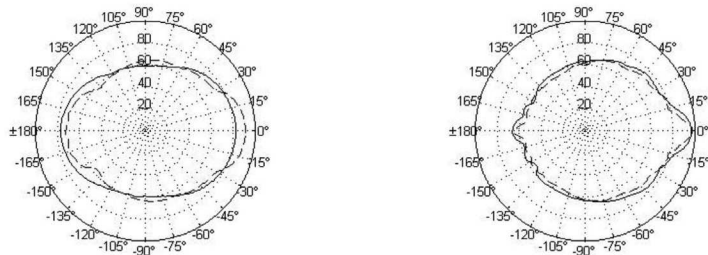
Octave (Hz)	-10 dB angle
500	22
1000	13
2000	16
4000	13
8000	13
16000	12

1200 X 200 HORIZONTAL

Notice the wide area of equal SPL caused by short measurement distance.

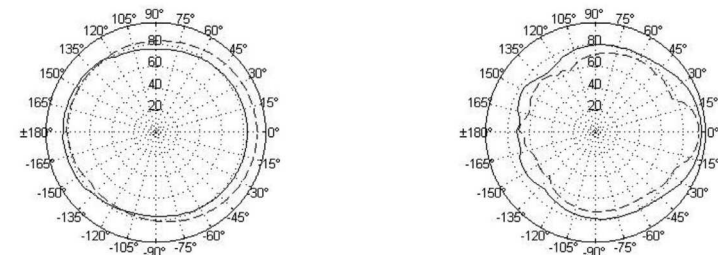


SQUARE HORIZONTAL



Octave (Hz)	-10 dB angle
500	47.8
1000	24.8
2000	12.8
4000	8.8
8000	6.8
16000	5.8

1200 X 200 VERTICAL



Octave (Hz)	-10 dB angle
500	n/a
1000	123.5
2000	41.5
4000	18.5
8000	10.5
16000	5.5

5.2 Electrical specifications

ELECTRICAL PROPERTIES

External Power Supply	+24 V DC, 2.5 A
Input impedance, RCA	10 kOhm
Input voltage, RCA	0.9 Vp-p
Rated Output	160 V rms (135 nF load)
S/N Ratio	> 70 dB
THD	< 0.05 @ 75% Rated Output

AUDIO PROPERTIES

Output Frequency min.	250 Hz - 16 kHz
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OPERATIONAL CONDITIONS

Temperature Range	0°C - 40°C (32°F - 72°F)
IP Class	IP20

6. PRODUCT LABELS

Product labels of SSHA6060, SSHA12020 and AA160 Basic amplifier



7. TROUBLESHOOTING

If the sound cannot be heard,

- Make sure that the Power Supply is connected to the amplifier and the power is turned on (Green LED stays on)
- Make sure that the amplifiers volume level is not at its minimum level
- Make sure that all the cables have been connected correctly and the media player is turned on and it is functioning properly. If the media player has it's own volume control, make sure the volume has been set at sufficient level

If the sound volume is too low,

- Make sure that the signal cable's D-sub9 connector is properly connected. Use connector screws to ensure the successful connection
- Make sure that the media player's volume level is set higher (still adjusting the amplifier's volume level to an appropriate level, so that red LED doesn't turn on)
- Please note that the media player's output capacity affects the amplifier's final audio output

8. MAINTENANCE

The Sound Shower 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 loudspeaker does not disconnect main power from the power supply unit. The Panphonics Sound Shower does not need periodical maintenance.

9. AUDIO ELEMENT

All Sound Showers are based on the Panphonics Audio Element. The Element is an electrostatic transducer. The way it is manufactured, however, places it to entirely different category compared to traditional electrostatic loudspeakers.

9.1 Technical description

In the element, a membrane vibrates between two surface layers, the so called stators, in coherence with the input audio signal. The whole input signal is fed to the entire element area, no frequency or spatial filtering is included.

Operation of the element is based on porous structure and its permeability to air. The element can be covered and its surface can be patterned applying various materials or techniques. In all cases, the air permeability requirement has to be met.

Do not unnecessarily bend or otherwise stress the element. Pressure can be applied on the element surface only at

areas 5 millimetres or less from the edges. Do not cut, pierce or otherwise dismantle or mechanically damage the element structure without first asking for specific instructions from Panphonics technical support.

The maximum power handling capacity is frequency dependent. The table below shows the maximum signal voltage that can be applied to the element. Note that this voltage may damage the element. An adequate safety margin should be applied.

The element is a capacitive load to the driving amplifier and operates with a special adapter or special amplifier only. It has no magnetic components and does not generate magnetic fields when in use. After operation, the bias voltage remains in the element for 30 seconds. When used without a short-circuiting system for unloading the bias, one should not remove connectors before that time for safety reasons. CE-approved audio elements have a safety area of 6 mm on the edge of the element. On this area there is no audio signal or electricity.

FREQUENCY (HZ)	MAX DRIVING VOLTAGE (V, PEAK TO PEAK)
100	500
1000	500
5000	500
10 000	500
20 000	300

ELEMENT ELECTRONIC CONNECTIONS AND ELECTRICAL RATINGS:

Black wire (pin 9)	AUDIO negative
Red wire (pin 6)	AUDIO positive, max. 500v p-p
White wire (pin 3)	BIAS VOLTAGE - 450v dc, max

ELEMENT CAPACITANCE IS 40 nF (for S60, value depending of the element area). Impedance can be calculated with formula $Z=1 / (2 \pi f C)$, where f is frequency and C panel capacitance. The table below describes the amounts of current and power required to drive a 30 nF audio element at frequency dependent maximum voltages given above.

f (Hz)	I (A)	P (VA)
100	0.0044	0.8
1 000	0.0444	7.9
5 000	0.2221	39.3
10 000	0.4443	56.5
20 000	0.5331	78.5

9.2 Acoustic properties

The Panphonics Audio Elements are extremely directive. The directivity is a function of the frequency. At frequencies above 2 kHz, the standard S60 size Panphonics audio elements have directivity of 4 degrees. Because of the directivity and the phase coherence of the produced wave field, the output sound pressure stays at equal level even to long distances

The element functions best at frequencies from 300 Hertz upwards. The nominal indented operational frequency range for the element is 300 – 22.000 Hz. The Panphonics audio elements have good quality of sound

with very low harmonic distortion.

The element has precise impulse response, enabling variety of applications and easy modifications to any specific use.

Maximum continuous sound pressure level is 95 dB, peak SPL being 108dB@8kHz / 3% THD, measured with element version 1.21.

Every doubling of the element surface area increases the produced audio energy with 3 dB. At the same time the frequency range is extended towards lower frequencies. With Panphonics technology, the increase in area increases also the directivity of the low

frequencies. Because of optimised use of active area, installing elements side-by-side creates the same acoustical effect as having one element of the size and shape of the collage. As the audio output is created over the whole area of each element, no boundary effects such as high frequency comb filtering are detected.

9.3 Requirements for the amplifier

Like all electrostatic loudspeakers, Panphonics Audio Element appears as capacitive load to an amplifier, contrary to a conventional magnetic loudspeaker, the so-called dynamic loudspeaker, which is a resistive load. The element also requires bias voltage, which is not provided by typical audio amplifiers.

Resistive load dissipates power as heat. A capacitor stores electrical energy instead of converting it to heat. Capacitive load is highly reactive, which means that it sends the stored electrical power back to the amplifier when signal reverses polarity. This tends to cause problems to normal analogue amplifiers.

The power requirement of the Panphonics Audio Element can not be directly compared to that of a magnetic speaker. When driving an electrostatic loudspeaker, the amplifier has to handle a different relation between voltage and current than when driving a dynamic loudspeaker and the power requirement is highly frequency dependent. Therefore, one can

not evaluate the ability of an amplifier to drive an electrostatic loudspeaker by its power rating. With a certain degree of simplification, an electrostatic element can be said to run on voltage instead of wattage.

9.4 Environmental

The element as such is indented to indoor use, with operating temperature range from -10 to +70 degrees Celsius. Depending of other environmental conditions, such as humidity and mechanical stress, the range may be extended remarkably. In the operating environment the humidity combined with high temperatures should not rise above 70 % non-condensing. High heat and humidity may cause irreversible damages to the element. Some restrictions apply also to the storage environment of the element.

The element as such has ingress protection classification IP30. It has survived operational in very demanding environmental test sequence following the standard SAEJ-1885kJ. For more details, please contact Panphonics technical support.

9.5 Patents

The product is protected by one or more of the following patents or patent applications:

EP 0883972, JP 4138004, JP 4312821, US 6483924, CN ZL200880005581.0, JP 5568313, US 9,301,055, CN ZL200980113569.6, JP 5685524, US 8,565,454, EP 1226741, FI 116605, JP 4809561, EP 1010166, JP 4256935, US 6711267

10. EU CONFORMITY

PANPHONICS

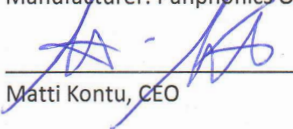
EU DECLARATION OF CONFORMITY

1. Product models: Sound Shower SSHA 12020, Sound Shower SSHA 6060
2. Panphonics Oy
Luomannotko 3
02200 Espoo
Finland
3. This declaration of conformity is issued under the sole responsibility of the manufacturer.
4. Object of the declaration:
Equipment: Active electrostatic loudspeaker
Brand name: Sound Shower
Model/type: Sound Shower SSHA 12020, Sound Shower SSHA 6060
5. The object of the declaration described in point 4 is in conformity with the relevant Community harmonisation legislation:
Low Voltage Directive (LVD) 2014/35/EU
Electromagnetic Compatibility Directive (EMC) 2014/30/EU
6. References to the relevant harmonised standards used, or references to the specifications in relation to which conformity is declared:
IEC 60065:2014 + A11:2017
EN 55103-1:2009 + A1:2012
EN 55103-2:2009

7. Signed for and on behalf of:

Helsinki, 14th of March 2018

Manufacturer: Panphonics Oy


Matti Kontu, CEO

Directives and regulations involved:
2014/35/EU (LVD), 2014/30/EU (EMC),
2012/19/EU (WEEE), 2011/65/EU (RoHS)

2012/19/EU (WEEE):

Panphonics Oy is a member of the ICT Producer Co-operative -TY as of January 24th 2007. Panphonics Oy has been registered in the producer co-operative's membership register under the number 2306. Company's membership information has been forwarded to the Finnish Authorities. ICT Producer Co-operative-TY

has been registered as a WEEE compliance scheme in the Pirkanmaa Centre for Economic Development, Transport and the Environment Producer register under the number PIRELY/555/07.00/2010.

2011/65/EU (RoHS):

Parts are defined and manufactured to meet RoHS-compliance.

Product Customs Codes:

cn-code 85184080

11. 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 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.

1) The period of warranty will be twenty-four (24) 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) This Limited Warranty is valid and enforceable only in the following states:

European Community, Norway, Iceland and Switzerland.

3) 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.

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

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

6) 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 with corrosive materials, liquids or gasses

or other way highly corrosive environment;

- 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 labour 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.

7) 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.

8) 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 it is contrary to mandatory provisions of law, the purchaser will be finally responsible for product liability.

9) 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.

12. WARNINGS AND DISCLAIMERS



This symbol on the product means there is **uninsulated, dangerous voltage within the product enclosure that may present a risk of electrical shock.**



Only suitable for use at areas with **altitude less than 2000m**



Only suitable for use at **non-tropic climate areas**



This symbol means the product must **not be discarded as household waste, and should be delivered to an appropriate collection facility for recycling**

UK

13. IMPORTANT SAFETY INSTRUCTIONS

1. Panphonics speakers are designed to be used with supplied amplifier and power source only.
2. Disconnect unit from main voltage before making any connections.
3. Read all documentation before operating your equipment.
4. Follow all instructions.
5. Do not remove the rear cover. No user serviceable parts inside.
6. Make sure power outlets conform to the power requirements.
7. Do not operate the unit on a surface or in the environment what may impede the normal flow of air around the unit.
8. Do not use the unit near high heat or moisture-producing devices. Device is for inside use only.
9. When connecting a media player set the media players output volume (when adjustable) as high as possible without causing any distortion to the AA-160 amplifiers input stage.
10. Do not spill water or other liquids into or on to the power supply and amplifier. Do not place any objects containing liquid on or near the power supply or amplifier
11. **EQUIPMENT SHOULD BE INSTALLED AND SERVICED BY A SKILLED PERSON ONLY.**
12. The product label is located on the amplifier's rear plate.

FI

13. TÄRKEÄÄ TIETOA TURVALLISUUDESTA

1. Panphonics-kaiuttimet on suunniteltu käytettäväksi vain toimitetun vahvistimen ja virtalähteen kanssa.
2. Irroita laite seinästä ennen kytkentöjen tekemistä.
3. Lue kaikki oheistieto ennen laitteen käyttöönottoa.
4. Noudata annettuja ohjeita.
5. Älä poista takasuojaa. Sisällä ei ole käytettäviä osia.
6. Pidä huolta, että pistorasiasi virta vastaa määritellyjä virtavaatimuksia.
7. Älä käytä laitetta pinnoilla tai ympäristöissä, jotka voivat haitata normaalia ilmavirtaa laitteen ympärillä.
8. Älä käytä laitetta voimakasta lämpöä tai kosteutta tuottavien laitteiden läheisyydessä. Laitetta tulee käyttää vain sisätiloissa.
9. Yhdistettäessä mediasoittimeen, säädä mediasoitimen ulostuleva äänenvoimakkuus (mikäli se on säädettävissä) mahdollisimman suureksi aiheuttamatta äänen särkymistä AA-160 vahvistimen sisään-tulossa.
10. Älä läikytä vettä tai muita nesteitä kaiuttimen tai virtalähteen päälle tai sisälle. Älä aseta nestettä sisältäviä esineitä kaiuttimen tai virtalähteen päälle tai niiden läheisyyteen.
11. **LAITTEEN TULEE ASENTAA JA HUOLTTAA ASIAANTUNTEVA HENKILÖ.**
12. Tuote-etiketti löytyy vahvistimen takalevystä.

DUT**13. BELANGRIJKE VEILIGHEIDS-
INFORMATIE**

1. De Panphonics speakers zijn ontworpen om enkel gebruikt te worden met de meegeleverde versterker en power supply.
2. Schakel de spanning uit vooraleer de kabels aan te sluiten
3. Raadpleeg eerst de documentatie vooraleer het materiaal in gebruik te nemen
4. Volg nauwgezet alle instructies
5. De achterkap niet verwijderen. Hier bevinden zich geen onderdelen die door de klant kunnen hersteld worden.
6. Zorg ervoor dat het gebruikte stopcontact conform is met de voorgeschreven vereisten van de power supply.
7. Gebruik de unit niet in afgesloten ruimtes die geen normale luchtcirculatie rond het toestel toelaten.
8. Gebruik de unit niet in de buurt van water of een warmtebron. Het toestel is enkel geschikt om binnen te gebruiken.
9. Bij het aansluiten van een media player zet je het volume van de media player (indien mogelijk) zo hoog mogelijk, zonder dat er vervorming van het geluid optreedt naar de AA-160 versterker
10. Zorg ervoor dat de versterker en power supply niet in contact komen met water en andere vloeistoffen. Geen vloeistoffen noch voorwerpen die vloeistoffen bevatten op of naast de voedingseenheid of versterker en power supply.

11. HET MATERIAAL DIENT GEINSTALLEERD EN ONDERHOUDEN TE WORDEN DOOR EEN GEQUALIFICEERD TECHNIEKER
12. Het product-label bevindt zicht op de achterkant van de versterker

POR**13. IMPORTANTE: INFORMAÇÃO
DE SEGURANÇA**

1. As colunas Panphonics são projectadas para serem usadas apenas com o amplificador e transformador de corrente fornecidos;
2. Desligar a unidade da corrente principal antes de fazer quaisquer ligações;
3. Ler toda a documentação antes de operar o equipamento;
4. Seguir todas as instruções;
5. Não remover a tampa traseira. Não existem partes utilizáveis no interior.
6. Certificar-se que as tomadas estão de acordo com a corrente necessária;
7. Não operar a unidade numa superfície ou ambiente que impeça um fluxo normal de ar à sua volta;
8. Não usar a unidade perto de fontes de calor ou dispositivos que possam produzir humidade. O equipamento é apenas para uso em interior;
9. Quando ligar a um leitor, ajuste o volume do leitor (se for ajustável) tão alto quanto possível, sem causar distorção na entrada do amplificador AA-160.
10. Não virar água ou outros líquidos no transformador ou amplificador. Não coloque líquidos ou objetos contendo líquidos encima ou próximo à fonte de energia ou amplificador

DAN**13. VIGTIG SIKKERHEDS- OG
INSTALLATIONSINFORMATION**

11. O equipamento deve ser apenas instalada por pessoal técnico qualificado
 12. A etiqueta do produto está localizada na parte traseira do amplificador.
1. Panphonics højttalere er kun beregnet til brug sammen med medfølgende forstærker og strømforsyning.
 2. Strømforsyningen må ikke være tilsluttet forstærkeren, når udstyr tilsluttes forstærkeren.
 3. Læs alle brugsanvisninger inden ibrugtagning af udstyret.
 4. Følg nøje alle instruktioner i brugsanvisningen.
 5. Fjern ikke bagside skjoldet. Der er ikke adgang til udskiftelige komponenter.
 6. Vær sikker på at strømforsyningen passer til netspændingen (i DK - 230V)
 7. Installer ikke forstærkeren på en overflade, eller anden måde, der hindre almindelig luftcirkulation omkring forstærkeren.
 8. Installer ikke forstærkeren i varme eller fugtige omgivelser. Forstærkeren er kun til indendørs brug.
 9. Når der tilsluttes en justerbar lydkilde til forstærkeren, juster da lydkilden til den maximale volumen uden den forvrængning.
 10. Apparatet må ikke udsættes for dryp eller sprøjt, og ingen genstande, der er fyldt med væske, so, t.eks. vaser, må anbringes på afspilleren

POL**13. WAŻNE INFORMACJE
DOTYCZĄCE BEZPIECZEŃSTWA**

11. Udstyret bør kun installeres af faglært personale.
 12. Produkt label er placeret på forstærkerens bagplade.
1. Głośniki Panphonics mogą być używane jedynie z dostarczonym wzmacniaczem i zasilaczem.
 2. Rozłącz urządzenie od zasilacza przed wykonaniem jakichkolwiek połączeń.
 3. Przeczytaj uważnie całą dokumentację przed włączeniem twojego urządzenia.
 4. Kieruj się zaleceniami zawartymi w instrukcji obsługi.
 5. Nie otwieraj urządzenia. Do naprawy i wymiany części upoważniony jest jedynie serwis fabryczny
 6. Upewnij się że gniazda sieciowe dostosowane są do wymaganego zasilania.
 7. Nie podejmuj działań ograniczających naturalną cyrkulację powietrza wokół urządzenia.
 8. Nie używaj urządzenia blisko źródeł ciepła albo wilgoci. Głośniki są przeznaczone tylko do pracy wewnątrz pomieszczeń.
 9. Podczas łączenia odtwarzacza audio, ustaw poziom sygnału wyjściowego (jeśli jest to regulowane) na możliwie wysokim poziomie, który nie powoduje przesterowania wejścia wzmacniacza AA-160
 10. Nie rozlewaj wody i innych płynów na wzmacniacz i zasilacz. Prosimy nie umieszczać płynów lub przedmiotów

zawierających płyny na/w pobliżu zasilacza i wzmacniacza

11. URZĄDZENIE POWINNO BYĆ INSTALOWANE I NAPRAWIANE TYLKO PRZEZ WYKWALIFIKOWANY PERSONEL TECHNICZNY.

12. Etykieta produktu znajduje się na tylnej pokrywie wzmacniacza.

RUS

13. ВАЖНЫЕ МЕРЫ ПРЕДОСТОРОЖНОСТИ

1. Динамики Panphonics (Панфоникс) предназначены для использования только с поставляемым усилителем и источником питания
2. Отсоедините питание устройства перед выполнением любого подключения
3. Внимательно прочитайте инструкции перед началом работ
4. Следуйте всем инструкциям
5. Не снимайте заднюю крышку, поскольку там нет частей обслуживаемых пользователем
6. Убедитесь что напряжение в сети соответствует потребляемой мощности
7. Не используйте прибор в местах, которые могут препятствовать нормальной работе оборудования
8. Не используйте динамик вблизи высоких температур и в условиях высокой влажности. Устройство предназначено для использования только внутри помещения
9. При подключении медиа плеера, установите настройки звука (если это возможно) как можно громче без изменения настроек усилителя AA-160

10. Не допускайте попадания воды или других жидкостей на оборудование. Вблизи источников питания, а также амплификаторов строго запрещается хранить жидкость и предметы, содержащие жидкости.

11. ОБОРУДОВАНИЕ УСТАНОВЛИВАЕТСЯ И ОБСЛУЖИВАЕТСЯ ТОЛЬКО СПЕЦИАЛИСТОМ

12. Этикетка с информацией о продукте находится на задней панели усилителя

FRA

13. INFORMATIONS IMPORTANTES SUR LA SÉCURITÉ

1. Les haut-parleurs Panphonics sont conçus pour être utilisés avec l'alimentation et l'amplificateur fournis.
2. Coupez l'alimentation avant de connecter les câbles.
3. Reportez-vous à la documentation avant d'utiliser le matériel.
4. Suivez bien toutes les instructions.
5. Ne pas retirer le couvercle arrière. Ici se trouvent les pièces qui ne peuvent pas être réparés par le client.
6. Assurez-vous que la prise utilisée, sera conforme avec les exigences prescrites de l'alimentation.
7. N'utilisez pas l'appareil dans les espaces clos qui ne permettront pas la circulation d'air normale autour de l'appareil.
8. N'utilisez pas l'appareil près de l'eau ou d'une source de chaleur. L'appareil est adapté pour une utilisation en intérieur.
9. Lors de la connexion d'un lecteur multimédia vous mettez le volume sur le lecteur multimédia (si possible)

aussi haut que possible sans qu'il y a se produit une distorsion à l'amplificateur AA-160.

10. Assurez-vous que l'amplificateur et l'alimentation ne sont pas en contact avec de l'eau et d'autres liquides. Ne pas placer de liquides ou d'objets contenant des liquides sur ou près de la source d'alimentation ou de l'amplificateur.

11. Le matériel doit être installé et maintenu par un technicien qualifié.

12. L'étiquette se trouve à l'arrière de l'amplificateur.

EST

13. TÄHTIS OHUTUSTEAVE

1. Panphonicsi kõlarid on mõeldud kasutamiseks ainult tootjapoolse võimendi ning toiteallikaga.
2. Eemaldage kõlar vooluallikast enne kui ühendate teisi juhtmeid
3. Lugege läbi kogu dokumentatsioon enne kui hakkate kasutama oma seadmeid
4. Järgige kõiki juhiseid
5. Ärge eemaldage tagumist paneeli. Seal ei ole kasutatavaid osi sees.
6. Veenduge, et pistikupesad vastavat võimsuse nõuetele
7. Ärge kasutage seadet pinnal või keskkonnas, mis takistab seadme ümber normaalset õhuliikuvust.
8. Ärge kasutage seadet kohtades, kus on kuum või niiske. Seade on ainult sisetingimustes kasutamiseks.
9. Kui ühendate meediapleierit, määrake meediapleieri väljundi helitugevus(kui võimalik) nii tugevaks kui võimalik, ilma et põhjustaks helimoonutusi AA-160 helivõimendile sisendis

10. Välistage vedelike sattumist toiteallikale või võimendile. Ärge asetage vedelikke või vedelikke sisaldavaid esemeid, toiteallika või võimendi peale ega nende lähedale.

11. SEADMEID LASKE HOOLDADA JA PAI GALDADA AINULT ASJATUNDJATEL.

12. Toote etikett asub helivõimendi tagumisel paneelil.

GER

13. WICHTIGE INFORMATIONEN ZUR SICHERHEIT

1. Panphonics Lautsprecher dürfen ausschließlich mit dem mitgelieferten Verstärker und Netzteil verwendet werden.
2. Trennen Sie die Einheit von der Stromquelle bevor Sie die Verbindung herstellen bzw. das Gerät anschließen.
3. Lesen Sie alle Bedienungsunterlagen aufmerksam, bevor Sie Ihre Geräte in Betrieb nehmen.
4. Bitte befolgen Sie alle Anweisungen.
5. Die hintere Abdeckung des Gerätes darf nicht entfernt werden. Die darin enthaltenen Bauteile können nicht durch den Benutzer repariert oder gewartet werden.
6. Stellen Sie sicher, dass die verwendete Steckdose dem spezifischen Spannungsbedarf und Strombedarf entspricht.
7. Lassen Sie um das Gerät ausreichend Platz, damit das Gerät gut belüftet und problemlos gewartet werden kann. Betreiben Sie das Gerät nicht in Bereichen oder auf Oberflächen, welche die Luftzufuhr behindern.
8. Stellen Sie das Geräte keinesfalls in Bereichen auf, die feucht oder nass

sind, -starker Hitze oder Schwankungen in der Umgebungstemperatur und der Umgebungsfeuchte ausgesetzt sind. Das Gerät ist ausschließlich für den Gebrauch im Innenbereich bestimmt.

9. Wenn Sie einen Media Player an das Gerät anschließen, stellen Sie die Lautstärke (wenn einstellbar) am Media Player so hoch wie möglich, ohne am Eingang des AA-160 Verstärkers Verzerrung zu erzeugen.
10. Achten Sie darauf, dass kein Wasser oder andere Flüssigkeiten in oder auf das Netzteil oder den Verstärker gelangt. Legen Sie keine Flüssigkeiten oder Gegenstände, die Flüssigkeiten enthalten, auf oder in die Nähe des Netzteils oder des Verstärkers.
11. **Die Anlage sollte nur von einer Fachkraft installiert und gewartet werden.**
12. Die Produktkennzeichnung befindet sich auf der Rückseite des Verstärkers.

NOR

13. VIKTIG SIKKERHETS- INFORMASJON

1. Panphonics høyttalere er utviklet for kun å benyttes med tilhørende forsterker og strømforsyning.
2. Husk å koble enhet fra nettspenning før tilkobling av høyttaler.
3. Les all dokumentasjon før bruk av utstyret.
4. Følg alle instruksjoner.
5. Fjern ikke bakdeksel. Her finnes ingen deler som kan repareres.
6. Sørg for strømuttak i samsvar med kraftbehov.
7. Ikke bruk enheten på en overflate

eller i miljø som kan hindre normal luftstrøm rundt enheten.

8. Ikke bruk enheten i nærheten av høy varme eller enheter som produserer fuktighet. Høyttaler er kun for innvendig bruk.
9. Ved tilkobling av en mediespiller sett mediespillere volumet (når justerbar) så høyt som mulig uten å forårsake noen forvrengning til AA-160 forsterkers inngang.
10. Apparat må ikke utsettes for dryppende vann eller vannsprut, og ingen gjenstander som inneholder væske, som eksempelvis, må plasseres på apparatet
11. **UTSTYRET SKAL INSTALLERES OG VEDLIKEHOLDES AV KVALIFISERT PERSONELL.**
12. Produktetiketten er plassert på forsterkerens bakplate.

CZE

13. DŮLEŽITÉ BEZPEČNOSTNÍ INFORMACE

1. Reprodukty Panphonics jsou navrženy pro použití pouze s dodávaným zesilovačem a zdrojem energie.
2. Před provedením jakéhokoli propojení, odpojte zařízení od hlavního el. napětí.
3. Přečtěte si veškerou dokumentaci před zahájením provozu vašeho zařízení.
4. Dodržujte všechny pokyny.
5. Neodstraňujte zadní kryt. Uvnitř zařízení nejsou žádné opravitelné části.
6. Ujistěte se, že použité zásuvky jsou v souladu s energetickými požadavky zařízení.

7. Nepoužívejte zařízení na povrchu nebo v prostředí, které může narušit normální tok vzduchu okolo zařízení.
8. Nepoužívejte zařízení v blízkosti zdroje tepla nebo vlhkosti. Zařízení je pouze pro vnitřní použití.
9. Při připojení multimediálního přehrávače, nastavte výstupní hlasitost (při možnosti nastavení) na nejhlasitější, aby nebylo způsobeno žádné narušení vstupu zesilovače AA-160.
10. Vyvarujte se polití zesilovače a zdroje vodou, nebo jinými tekutinami. Nepokládejte tekutiny nebo objekty obsahující tekutinu na zařízení. Nepokládejte do blízkosti zdroje elektrického napájení nebo zesilovače.
11. **ZAŘÍZENÍ BY MĚLO BÝT NAINSTALOVÁNO A OBSLUHOVÁNO POUZE KVALIFIKOVANOU OSOBOU.**
12. Štítek produktu je umístěn na zadní desce zesilovače.

SWE

13. VIKTIG SÄKERHETS- INFORMATION

1. Högtalare från Panphonics är tillverkade för att endast användas med medföljande förstärkare och nätadapter.
2. Koppla ur strömmen från enheten innan du gör några anslutningar.
3. Läs all dokumentation innan du använder dig av din enhet.
4. Följ alla instruktioner.
5. Avlägsna ej höljet på baksidan. Det finns inga delar på insidan som kan justeras eller repareras av användaren.
6. Säkerställ att nätströmsuttag möter strömkraven.

7. Använd ej enheten på en yta eller i en miljö som kan hindra normalt luftflöde runt enheten.
8. Använd ej enheten i närheten av hög värme eller fuktproducerande apparater. Enheten får endast användas inomhus.
9. När du ska ansluta en mediaspelare, ställ mediaspelarens utgångsvolym (om den är reglerbar) så starkt som möjligt utan att orsaka distorsion i AA-160-förstärkarens ingång.
10. Spill ej vatten eller andra vätskor i eller på nätadaptern eller förstärkaren. Spelaren får inte utsättas för droppar eller fukt och därför skall inte föremål som innehåller vätska, exempelvis vaser, placeras på spelaren
11. **INSTALLATION OCH SERVICE FÅR ENDAST UTFÖRAS AV KVALIFICERAD SERVICEPERSONAL.**
12. Produktens märkning är placerad på förstärkarens baksida.

SPA

13. INFORMACIÓN IMPORTANTE DE SEGURIDAD

1. Las bocinas Panphonics están diseñadas para ser operadas con el amplificador y fuente de poder suministradas.
2. Desconecte el equipo de la red de alimentación antes de hacer cualquier conexión.
3. Lea toda la documentación incluida antes de operar el equipo.
4. Siga todas las instrucciones.
5. No retire la tapa trasera. No hay ningún tipo de reparación o ajuste dentro del equipo que el usuario pueda acceder.

6. Asegúrese de que la red eléctrica cumpla con los requisitos de alimentación del equipo.
7. No opere el equipo en una superficie o ambiente que impida el flujo normal de aire alrededor del mismo.
8. No use el equipo cerca de una fuente de calor o dispositivos que generen humedad. El equipo es para uso en interior únicamente.
9. Al conectar el reproductor de audio, ajuste el volumen del mismo (si se puede) lo más alto posible sin que esto cause ninguna distorsión a la entrada del amplificador AA-160.
10. No derrame agua o cualquier otro líquido en o dentro del amplificador o su fuente de alimentación. No colo que líquidos, tampoco objetos que contengan líquidos sobre o cerca de la fuente de alimentación o el amplificador.
11. **EL EQUIPO DEBE SER INSTALADO Y REPARADO POR PERSONAL CALIFICADO.**
12. Los datos de placa están localizados en la parte posterior del amplificador.

ITA

13. IMPORTANTI INFORMAZIONI DI SICUREZZA

1. I diffusori Panphonics sono progettati per essere impiegati solamente con l'amplificatore e l'alimentatore forniti.
2. Sconnettere l'unità dalla presa di alimentazione prima di effettuare le connessioni.
3. Leggere tutta la documentazione prima di mettere in funzione l'apparecchiatura.
4. Seguire tutte le istruzioni fornite.

5. Non rimuovere la copertura posteriore. Non ci sono parti modificabili all'interno.
6. Assicurarsi che le prese di corrente disponibili forniscano energia in modalità conforme a quanto richiesto.
7. Non usare l'unità ponendola su una superficie o in un ambiente che non permettano il normale flusso d'aria attorno alla stessa.
8. Non usare l'unità vicino a sorgenti di calore o dispositivi che producano umidità. Il dispositivo è progettato per l'esclusivo uso interno.
9. Connettendo un media player regolarne il volume al massimo livello possibile (se regolabile) evitando di causare distorsione allo stadio di ingresso dell' AA160.
10. Non versare acqua o altri liquidi sull'alimentatore e sull'amplificatore. L'apparecchio non deve essere esposto a gocciolamenti o schizzi e non bisogna collocarvi sopra oggetti pieni di liquidi, come vasi
11. **L'apparecchiatura deve essere installata e mantenuta solamente da personale esperto.**
12. L'etichetta di prodotto è posizionata sul pannello posteriore

HUN

13. BIZTONSÁGI ELŐÍRÁSOK

1. A Panphonics hangszórók csak a hozzájuk tartozó erősítővel és tápegységgel használhatók.
2. Hangszóró és egyéb audio csatlakozás szerelése előtt győződjön meg arról, hogy az eszköz nincs tápfeszültség alatt.
3. Használat előtt olvassa el figyelmesen

- az eszköz használati útmutatóját.
4. Kövesse az útmutató leírását.
5. Az eszköz hátpanelét ne távolítsa el.
6. Győződjön meg a megfelelő tápfeszültségről az eszköz csatlakoztatása előtt.
7. Ne használja az eszközt olyan környezetben ahol nem biztosított az eszköz megfelelő hűtése. Biztosítsa az eszköz körüli szabad légáramlást.
8. Ne használja az eszközt magas hőmérsékletű, vagy párás környezetben. Az eszköz csak beltéri használatra való.
9. Médialejátszó csatlakoztatásakor ügyeljen arra, hogy a lejátszó kimeneti hangerejét úgy állítsa, hogy az ne okozzon torzítást az AA-160 erősítő bemenetén.
10. Fokozottan ügyeljen arra, hogy az erősítő és tápegység ne érintkezzen vízzel. Ne helyezzen folyadékot vagy folyadékot tartalmazó tárgyat az erőforrásra vagy az erősítőre, illetve ezek közelébe.
11. **Az eszközt csak megfelelő képesítésű szakember telepítheti és szervizelheti.**
12. A termék azonosítója az erősítő hátoldalán található.

ROM

13. IMPORTANTA INSTRUCȚIUNI DE UTILIZARE ÎN SIGURANȚA

1. Dispozitivele de sunet unidirectional Panphonics sunt proiectate spre utilizare, numai împreună cu amplificator și sursă de alimentare.
2. Deconectați dispozitivul de la sursa de alimentare cu curent, înainte de orice conectare a cablurilor de transmitere a semnalului sonor.
3. Citiți cu atenție toate instrucțiunile, înainte de utilizarea dispozitivului.
4. Urmați toate instrucțiunile.
5. Nu îndepărtați capacul dispozitivului. Nu exista elemente care necesită service în interior.
6. Asigurați-vă că sursa de curent electric este conform specificației.
7. Nu utilizați dispozitivul într-un mediu care poate împiedica aerisirea naturală.
8. Nu utilizați dispozitivul într-un mediu generator de umiditate.
9. Dacă utilizați un media player, setați volumul la un nivel corespunzător astfel încât să nu cauzati distorsiuni amplificatorului AA-160.
10. Evitați căderile accidentale de apă sau alte lichide, în zona de alimentare sau în amplificator. Nu puneti lichide, sau obiecte care contin lichide pe sau langa sursa de curent sau amplificator.
11. **Echipamentul trebuie instalat și remediat în caz de avarie, de către persoane autorizate.**
12. Eticheta produsului este postată pe tablita din spatele amplificatorului.

JPN 13. 安全性に関する重要な情報

1. パンフォニクス社のスピーカーは同社提供のアンプや AC アダプターと共に使用してください。
2. アンプをスピーカーやメディアプレーヤーに接続する際や接続を外す際は、必ず電源プラグを抜いてから作業を行ってください。
3. 機器を使用する前に、同梱されている説明書をよく読んでから使用ください。
4. 説明書の内容通りに使用してください。
5. アンプのカバーを外さないでください。ユーザーが独自に交換できる部品はありません。
6. 電源プラグを差す前に、お使いの地域の電源電圧仕様にて使用可能か確認ください。
7. アンプを設置する際は、換気が妨げられるような場所は避けてください。
8. 高温または高湿な環境での仕様は避けてください。アンプは屋外での使用はできません。
9. メディアプレーヤーをアンプに接続する際は、プレーヤー側の音量を最大に設定してください（ただし、音の歪みが発生しない程度の音量の中で、最大になるよう調整してください）。
10. アンプや電源アダプターには、水やその他の液体がかからないよう注意してください。液体や液体の入った物を電源装置やアンプの上または近くに置かないでください。
11. アンプの設置は、専門の知識を有する者が行ってください。
12. 製品ラベルはアンプの裏側に貼付されています。

CN 13. 重要的安全信息

1. Panphonics 扬声器被设计为只能与所提供的放大器和电源一起使用。
2. 在进行任何连接之前，断开本单元与主电源的连接。
3. 在操作设备之前请阅读所有文档。
4. 遵循所有的指示。
5. 请勿取下后盖。里面没有用户可维修的部件。
6. 确保电源插座符合电力要求。
7. 请勿在可能会妨碍本单元周围的空气正常流动的表面上或环境中操作本单元。
8. 请勿在高温或产生湿气的设备附近使用本单元。本设备仅限于在室内使用。
9. 当连接媒体播放器时，在不会对 AA160 放大器输入级造成任何失真的情况下，将媒体播放器的输出音量设置为尽可能高（当可调节时）。
10. 请勿将水或其它液体溅入电源和放大器。请勿将任何含有液体的物体放在电源或放大器上或附近。
11. 设备只能由技术人员进行安装和维修。
12. 本产品标签位于放大器的后面板上。

14. CONTACT INFORMATION

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