



Sound Shower® Passive

(SSHP)

TABLE OF CONTENTS

1. Product description
2. Dimensions and colours
3. Specifications
 - 3.1 Audio footprints
 - 3.2 Electrical specifications
4. Product labels
5. Troubleshooting
6. Maintenance
7. Audio element
 - 7.1 Technical description
 - 7.2 Acoustic properties
 - 7.3 Requirements for the amplifier
 - 7.4 Environmental
 - 7.5 Patents
8. EU conformity
9. Terms of warranty
10. Warnings and disclaimers
11. Important safety information (eng)
12. Contact information

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:

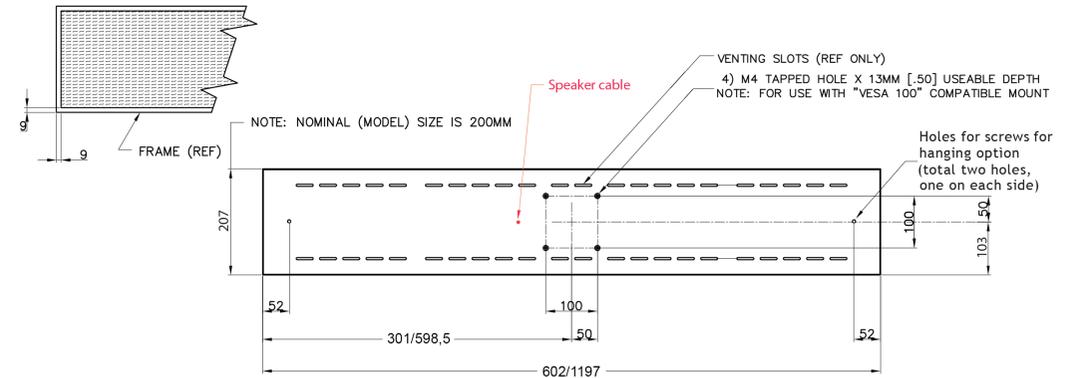
SSHP 60x20: 78cmx24cmx6cm/1,7kg//30.7"x9.4"x2.4"/3.7lbs

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

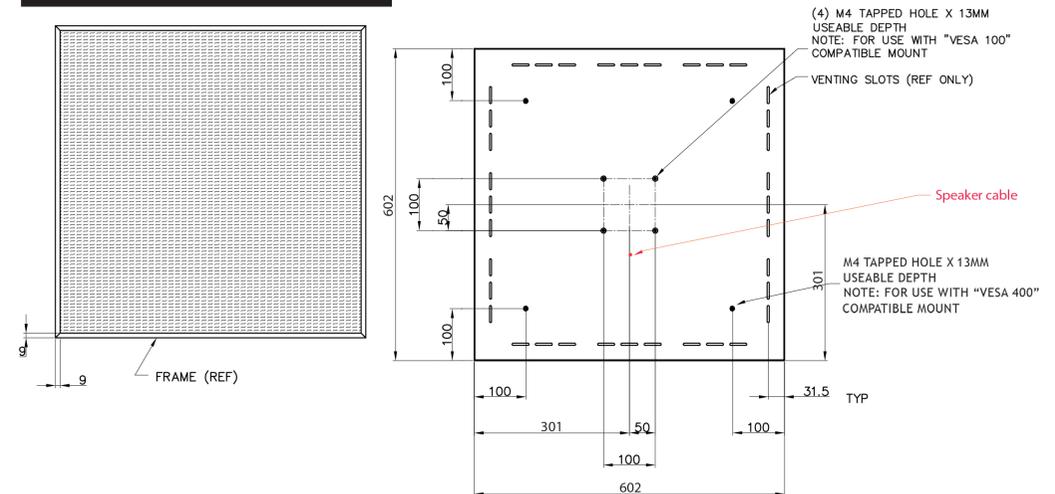
SSHP 180x20: 185cmx24cmx7cm/5kg//72.8"x9.4"x2.8"/11.0lbs

SSHP 60X20 / SSHP 120X20

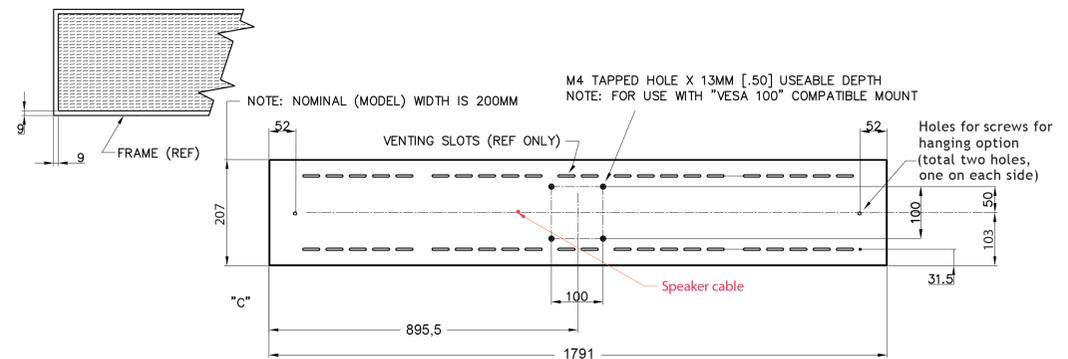


NOTE: APPROX DISTANCE IN WHICH PRODUCT FASTENERS (SCREW HEADS) PROTRUDE

SSHP 60X60



SSHP 180X20



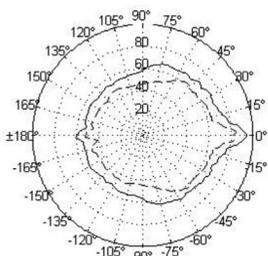
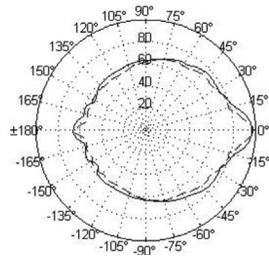
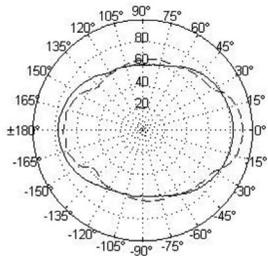
3. SPECIFICATIONS

3.1 Audio footprints

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

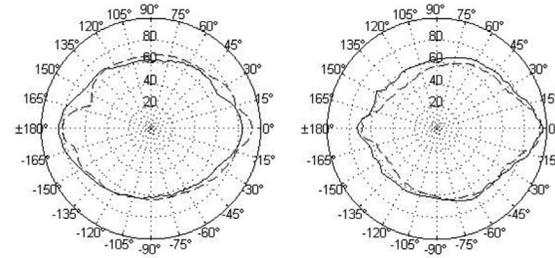
SIZE	FOOTPRINT AREA	OPENING ANGLE	WEIGHT (KG/LBS)
60x20	1.2m x 2.3m		1,4/3.1
60x60	1.3mx1.3m	Aprox. 4° each side	3,0/6.6
120x20	1.4m x 2.3m	Narrow side 4° , Wider side 16°	2,7/6.0
180x20	2.0m x 2.3m		3,6/7.9

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

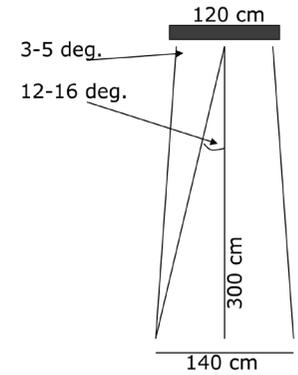
1200 X 200 HORIZONTAL



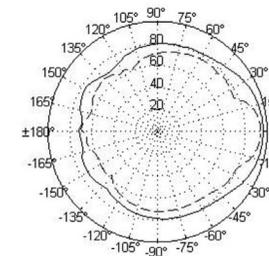
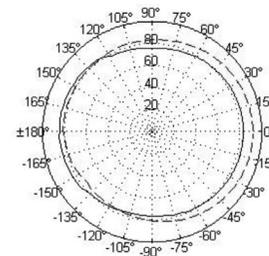
Octave (Hz)	-10 dB angle
500	22
1000	13
2000	16
4000	13
8000	13
16000	12

1200 X 200 HORIZONTAL

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



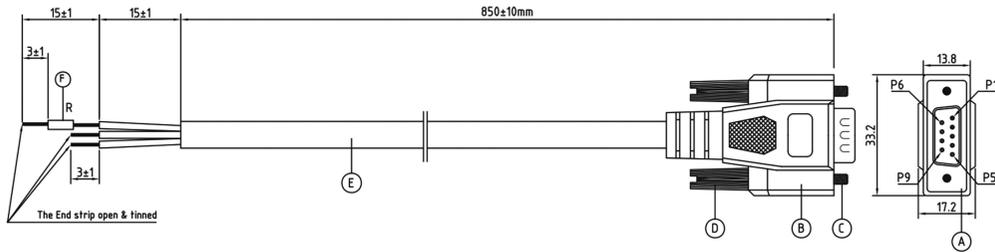
1200 X 200 VERTICAL



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

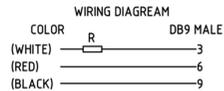
Amplifier connector 9-pin D-sub Connector



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 Panphonic 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 Panphonic 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 Panphonic 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

Sales&Product Info

sales@panphonics.com
+358 40 5390600

Admin

info@panphonics.com
+ 358 45 6610061

Homepage www.panphonics.com

Logistics

Panphonics Oy
Nuutisarankatu 15, nosto-ovi 27
33900 TAMPERE
FINLAND
tel. +358 40 5390600

PANPHONICS

info@panphonics.fi
www.panphonics.com