Power Amplifier 710

User manual

soulution

nature of sound

Dear client

We are proud that you decided yourself for a soulution amplifier. You have acquired an amplifier with outstanding sonic performance which you will enjoy for many years.

We understand your eagerness to get started but even though please study this manual step by step before you integrate the power amplifier 710 in your High Fidelity system. This manual contains also useful tips for the optimisation of your overall HiFi-system.

If there are any questions regarding the start-up or operation of your power amplifier 710 please do not hesitate to contact your dealer.

Have fun!

Your soulution - team

CE-Declaration of Conformity

Spemot AG declares that this product is in conformance with the following directives and standards:

Low Voltage Directive 2006/95/EG (EN/IEC 60065:2002)

Electromagnetic Compatibility 2004/108/EG (EN 55013:2001, EN 55020:2002, EN 61000-3-2:2006, EN61000-3-3:1995)

FCC-Notice

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- adjust or relocate the receiving antenna
- increase the separation between the equipment and the receiver
- connect the equipment into a mains outlet on a circuit different from that to which the receiver is connected
- consult the dealer or an experienced radio/TV technician for help

Disposal

According to the Directive 2002/96/EG of the European Parliament used consumer-electro technical appliances have to be disposed separately and have to be indicated with the following symbol.

In the case of disposal of this component please do so in conformity with legal and environmental regulations.

Table of Content

1 Quick start

Unpacking	Unpack the power amplifier 710 and store the packing for future transportations. Security advice: Never lift the power amplifier 710 by yourself. Take the required precautions for the transport of an apparatus of this weight. (ca. 80 kg)
Positioning	Position the power amplifier 710 on a stable base that is able to support min. 80kg. Security advice: Cooling air must be able to circulate and escape unrestricted.
Cabling	Disconnect all electrical appliances of your HiFi-system from the mains supply. Connect your power amplifier 710 with your preamplifier (according to user manual). Use the respective signal cables and the cable for the LINK-system. Connect the power amplifier 710 with your loudspeakers. Reconnect the power amplifier 710 and all other components of your HiFi-system with mains supply. Please use the enclosed high class mains cable. Security advice: While manipulating with cables the power amplifier 710 has to remain disconnected from the mains. Check the cables for tight fit or eventual damages of the cables potentially leading to short circuits.
Settings	Define the brightness of the display, the start-input as well as the start-mode. Security advice: Start-mode ON should only be used if the power amplifier 710 cannot be controlled via the front-panel and the LINK-connection is not available.
Switch on	Switch on your source devices and preamplifier. Turn down the volume of the preamplifier to a minimal level. Switch on your power amplifier 710. Security advice: Before you switch on your power amplifier 710 for the first time the Start-Mode must be OFF.

2 Important security advices:

User Manual:

Read this user manual carefully before you start-up your power amplifier 710 and follow all installation and security advices.

Please keep this user manual. In the case this manual gets lost you have the possibility to download it from the soulution-webpage.

(http://www.soulution-audio.com/downloads)

Mains:

Exclusively use 3 phase power cords with ground conductor. The may not be crushed by objects.

Unplug your power amplifier 710 from the mains connection in the following cases:

- before you manipulate with cables
- before you clean your amplifier
- during thunder storms or
- before you leave for longer periods

Operation:

Never run your power amplifier 710

- with opened housing
- with closed cooling-slots
- with high ambient temperatures (>40°C)
- close to heat sources like radiators, heatings, ovens or similar appliances dissipating heat
- with extremely high humidity for example in humid cellars or rooms similar humidity
- close to water (Sink, bathtub, or similar equipment)

Cleaning:

Use a soft and dry towel. We suggest using a non abrasive micro fibre towel. Please do not use any solvents or liquidities.

Transport:

Use only with the cart, stand, tripod, bracket or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving cart/apparatus combination to avoid injury or tip over.

Packing:

Please keep the original packing for future transports. The original packing is optimal protection against potential damages.

Service:

Do not try to repair your power amplifier 710 by yourself. It needs a service check by a qualified person in the following cases:

- the mains-cable or the mains connectors are damaged
- foreign substances or liquidity has entered the power amplifier 710
- the power amplifier 710 has seen rain
- the power amplifier 710 seems to malfunction
- the power amplifier 710 has fallen to the floor or the housing is damaged

Serial-Nr.: 710 -

Please note the serial-number of your power amplifier 710 above.

3 Technical Highlights

3.1 Layout

The power amplifier 710 is realised as symmetrical dual mono circuit. Left and right audio channel each has identical circuit boards. The overall layout has been optimised for shortest signal paths. All high current signal paths have solid copper bars for minimal losses. Critical components have been stabilised with massive aluminium plates.

3.2 Amplification circuit

Immediately following the input connector the music signal is buffered in the power amplifier 710 and is therefore transmitted with low impedance to the entrance of the following error amp, an extremely fast operation amplifier whose negative feedback seizes deviations fast and precise thanks to the high process-speed, providing for a corrected however still non-amplified incoming signal. Next follows the true core element of the power amplifier 710: the “fixed gain”-voltage amp. This highly linear (0.1 dB level deviation, 0.005% THD+N) amplifier stage can perform its full precision only under constant thermal conditions; therefore it is combined jointly with the error amp in a module casted with synthetic resin.

Per channel fourteen bipolar power transistors fixed on a massive copper rail and permanently temperature controlled for a constant idle current, provide finally for the gigantic current rating of the power amplifier 710 of more than 60 ampere.

3.3 Power supply

With the given linearity of the amplifier-stages it is in our view finally the stability of the supply voltages, being the power supply unit, deciding if a properly working amplifier is truly well sounding. The power supply unit of the power amplifier 710 is equipped with two 1’000VA- toroidal transformers, capacitors with a total capacity of nearly 250’000 microfarad and discrete rectifiers. All in all we use 10 separated power supply units. The power supply for both the error- amp and the “fixed-gain”-amp is stabilized in various stages.

4 Start of operation and handling of the power amplifier 710

Please take care while installing the power amplifier 710. Follow all security advices!

4.1 Scope of delivery and packing

Please check the scope of delivery:

- power amplifier 710
- mains cable
- user manual
- 2 pair cotton-gloves

Please store the packing of the power amplifier 710 for future transports. Check your power amplifier 710 for transport damages. In the case your power amplifier 710 is damaged please contact your soulution dealer.

Security advice: If your power amplifier 710 is still very cold from the transport, please let it warm within the packing, in order to omit condensation of water inside your power amplifier 710.

The power amplifier 710 has a high quality surface. Please be careful while transporting your power amplifier 710 so that the surface does not get scratched. Please use the enclosed cotton gloves.

Never position your power amplifier 710 on the front panel. The display glass could get scratched or even burst.

4.2 Optimal positioning of your power amplifier 710

There are no limitations on where to position your power amplifier 710. We suggest positioning it so that the connecting cables to the loudspeakers and the preamplifier remain short.

Please ensure ample distance to other components for unhindered circulation and dissipation of cooling air.

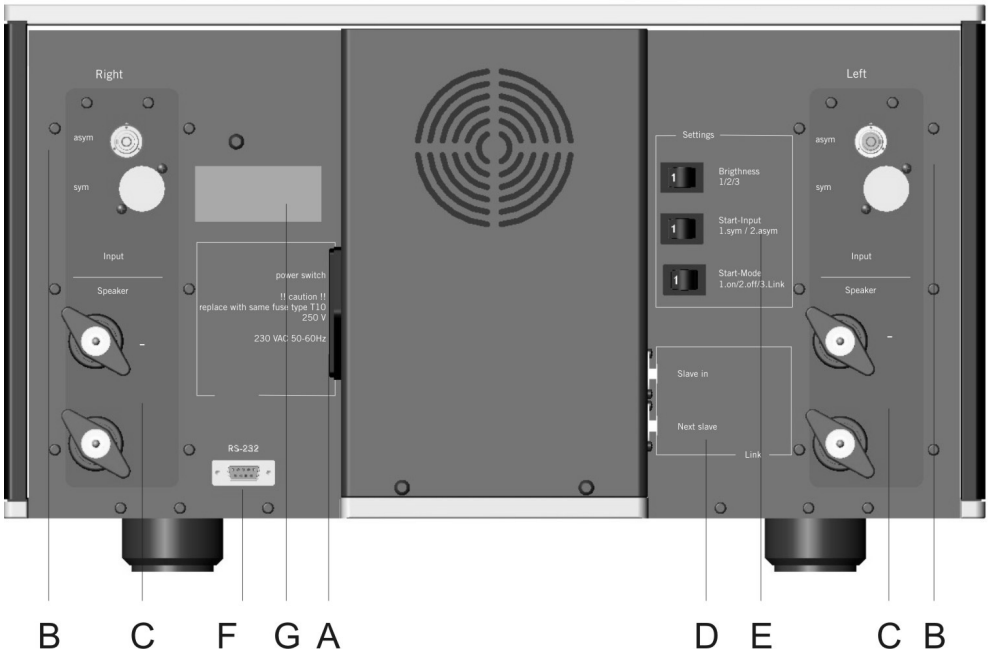
The power amplifier 710 reaches an operating temperature of ca. 45°C. The speed controlled fan will only be used if the ambient temperature is significantly above 25°C or if listen at high volumes for longer periods.

Security advice: **Never lift the power amplifier 710 alone!**

The power amplifier 710 has a weight of. 80 kg. Ensure that nobody gets insured while transporting your power amplifier 710. Please ensure that you do not squeeze your fingers or feet. (do not tip over laterally!)

Check whether the base is able to hold at least 80 kg. In case of doubt position your power amplifier 710 on the floor.

4.3 Rear panel of the power amplifier 710



Rear panel of the power amplifier 710

4.3.1 Mains (A)

Connect the power amplifier 710 with the mains supply. The enclosed power cord is optimised for this application.

After switch-on of the mains switch the standby power supply of the power amplifier 710 gets started. The display shows "WAIT". As soon as constant conditions are reached the power amplifier 710 changes to operating condition OFF (red LEDs in display).

Security advice: Only switch-off the mains connection if your power amplifier 710 is in operating condition OFF.

4.3.2 Input (B)

Your power amplifier 710 has a symmetrical and an asymmetrical signal input. For longer connecting cables we suggest to use the symmetrical inputs. For shorter sig-

nal paths also asymmetrical cables warrant a high class connection. Top quality connecting cable and optimal layout prerequisite.

Security advice: Please follow the security advices on page 6!

While manipulating with cables the power amplifier 710 has to remain disconnected from the mains. Before you disconnect the mains the power amplifier 710 has to be in operating condition OFF.

Due to the very high current impulse rating of your power amplifier 710 a wrong cabling or defective cables may destroy your loudspeakers.

Excessive volumes due to in appropriate handling may cause hearing damages.

4.3.3 Speaker (C)

Connect your loudspeakers to the power amplifier 710. The tremendous stability of the power amplifier 710 ensures optimal operation for all types of speaker cables. We recommend using top quality speaker cables with spade lugs.

Security advice: Please follow the security advices on page 6!

While manipulating with cables the power amplifier 710 has to remain disconnected from the mains. Before you disconnect the mains the power amplifier 710 has to be in operating condition OFF.

Check the connectors for tight fit. Check the cables for eventual damages. Short circuits provoked by thin threads form loudspeaker cables may end in a fire.

The power amplifier 710 comes with CE-darners which only can be removed with tools.

4.3.4 LINK (D)

With the LINK-system the power amplifier 710 can be remote controlled by the preamplifier 720/721. Connect the Slave-In of your power amplifier 710 with the Master-out of the preamplifier 720/721. With Next-Slave you may connect further components to the LINK-network.

4.3.5 Settings (E)

The settings define the condition of your power amplifier 710 after switch on of the mains.

Important: New settings for Start-Mode, Start-Input and Brightness are activated only after switch on of the mains.

4.3.5.1 Start-Mode

Start-Mode defines the operating condition after switch-on of the mains (ON/OFF/LINK).

Start-Mode ON:

After switch on of the mains the power amplifier 710 is started automatically. It can only be switch-of after it has reached the operating condition ON.

Start-Mode OFF:

After switch on of the mains the power amplifier 710 changes to the operating condition OFF.

Start-Mode LINK:

After switch on of the mains the operating condition of the power amplifier 710 gets controlled by the preamplifier. If the LINK–connection is missing the amplifier changes to operating condition OFF.

Security advice: We suggest the use of Start-Mode ON only if the front panel of the power amplifier 710 is not access able and the LINK – system is not installed.

Please be aware that the amplifier will start-up automatically and unattended after power blackout.

4.3.5.2 Start-Input

With Start-Input the active input after switch-on is defined (1. SYM / 2. ASYM).

4.3.5.3 Brightness

The brightness of the display can be changed in three levels (1=low / 2=medium / 3=high).

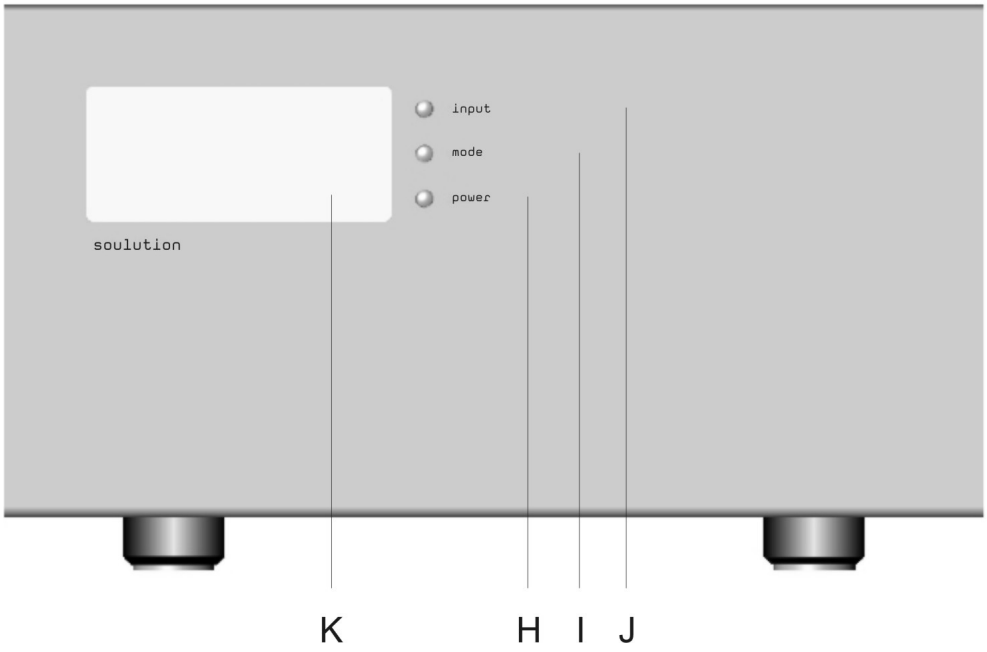
4.3.6 RS232 – Interface (F)

The power amplifier 710 can be remote controlled through the RS232 interface. All functions can be controlled and relevant information is provided to the control unit.

4.3.7 Type label (G)

Please note the serial number of your power amplifier 710 on page 7 of this user manual. This allows you to have the product specific data at hand without removing your power amplifier 710 from the HiFi rack.

4.4 Front panel of the power amplifier 710



Front panel of the power amplifier 710'

4.4.1 Power (H)

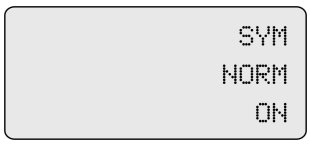
With the Power-button you define the operating condition ON or OFF (red LEDs). In operating condition OFF the loudspeaker terminals are muted. The loudspeaker terminals are only activated if the amplifier is ready for operation and if no errors are present.

Display after switch on of the mains switch

Display in operating condition OFF

4.4.2 Mode (I)

LINK function delegates the control of the start-up sequence to the preamplifier 720/721. The preamplifier 720/721 is the master of this master-slave control. In operating condition NORM the control over the start-up sequence remains with the power amplifier 710 independently of a connected LINK-cable.



Display in operating condition ON, Mode NORM

Display in operating condition ON, Mode LINK

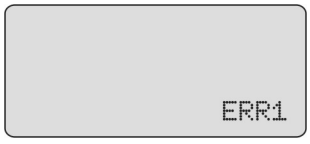
The Power-button remains active. The amplifier soulution 710 can always be switched off via the front panel.

4.4.3 Input (J)

Your power amplifier 710 has symmetrical (SYM) and asymmetrical (ASYM) input connectors. The selection is made comfortably at the press of a button on the front panel. The non active input is terminated. We suggest the use of the symmetrical connectors if possible.

4.4.4 Display (K)

The display shows all operating conditions of the functions Power, Mode and Input. If an error occurs during the start-up sequence or during operation the power amplifier 710 is switched off and lowest column shows ERR1..ERR3.



Display in operating condition ERR1

5 Protection functions of the power amplifier 710

Comprehensive protection functions ensure safe operation and a long lifetime. The power amplifier 710 has the following protection functions:

Level limitation:

For to high levels at the input of the power amplifier 710 the soft clip circuit is activated. The activated soft clip circuit will distort the output signal significantly, the sonic performance is reduced. Please ensure that the input levels are within the limit of 1.8 Vrms.

Overcurrent:

For an output current of > 60 A to the loudspeakers the power amplifier 710 is switched off automatically. This represents a maximal impulse power rating of ca. 3'000 W (48 V @ 0.8Ω)

Overtemperature:

The temperature of the power transistors is permanently monitored. If the maximal operating temperature is exceeded despite of active cooling system the power amplifier 710 is switched off automatically.

Fuse

The mains connection has a fuse which protects your amplifier against too high power consumption. Please replace with the same fuse type. The fuse is located within the mains switch on the rear side of the power amplifier 710.

Model 230 V, 50-60Hz	10A/T 250V micro fuse 5x20mm
Model 220 V, 60Hz	10A/T 250V micro fuse 5x20mm
Model 120 V, 50-60Hz	16A/T 250V micro fuse 5x20mm
Model 100 V, 50-60Hz	16A/T 250V micro fuse 5x20mm

6 Trouble shooting

Error	Action
No display	Check the cabling to the mains supply. Eventually replace the fuse of your power amplifier 710.
No music	Check the cabling to your preamplifier and the loudspeakers, whether the correct input (SYM/ASYM) is activated, whether the preamplifier is switched on and if the right source has been selected. Check whether output signal at your source and preamplifier is available. (Mute, Pause, etc.).
ERR1..3 after switch on	Switch off the mains of your power amplifier 710 for 15 seconds and switch on again. If the error has not disappeared please contact your soulution dealer.
ERR1..3 for OFF -> ON	Check the cabling, the mains voltage (Over-/Under voltage) and the level of the input signal. If the error has not disappeared please contact your soulution dealer.
ERR1..3 in operation	Switch off the mains of your power amplifier 710 for 15 seconds and switch on again. If the error has not disappeared please contact your soulution dealer.

6.1 Actions after the appearance of an error

If you con not identify the error please disconnect the mains supply (before you disconnect the power amplifier 710 has to be in operating condition OFF) and contact your soulution dealer.

7 Care and maintenance

7.1 Burn-In

The power amplifier 710 will play on top level immediately after the first placing into operation. However during the first 20-50 hours of operation you will notice a further improvement of its sonic qualities.

7.2 Longlife-precautions

We use only highest quality components for the power amplifier 710. Components prone to aging are kept under constant voltages in stand-by (OFF) condition in order to further increase their lifetime. In stand-by (OFF) condition the power amplifier 710 dissipates ca. 12 Watts.

Security advice:

You should disconnect the power amplifier 710 form the mains supply when you make a journey or if you are absent for longer time periods. Before you disconnect the mains the power amplifier 710 has to be in operating condition OFF.

7.3 Cleaning

Please use a soft towel for the cleaning of your power amplifier 710. We recommend the use of a nonabrasive micro fibre towel. Please do not employ any solvents.

Security advice: Liquidity is not allowed to enter the power amplifier 710. The electronic may be damaged seriously.

8 Service

If your power amplifier 710 needs service please contact your soulution dealer. For further information see www.soulution-audio.com

9 Guarantee

All soulution products are guaranteed against defects in material and workmanship for five years from date of purchase.

The guarantee is void if the power amplifier 710 has been subject to misuse, or negligence or has been modified, repaired or opened by a non authorised person without written authorisation of Spemot AG.

For the return transport to our premises please use exclusively the original packaging. Transport damages are not subject to this guarantee, repairs will be charged. We recommend effecting a transport insurance.

If you not posses the original packaging no more please contact your soulution dealer.

Basic repairs may be completed by your soulution dealer. Please clarify whether he is able to do the work before you send the power amplifier 710 back to us.

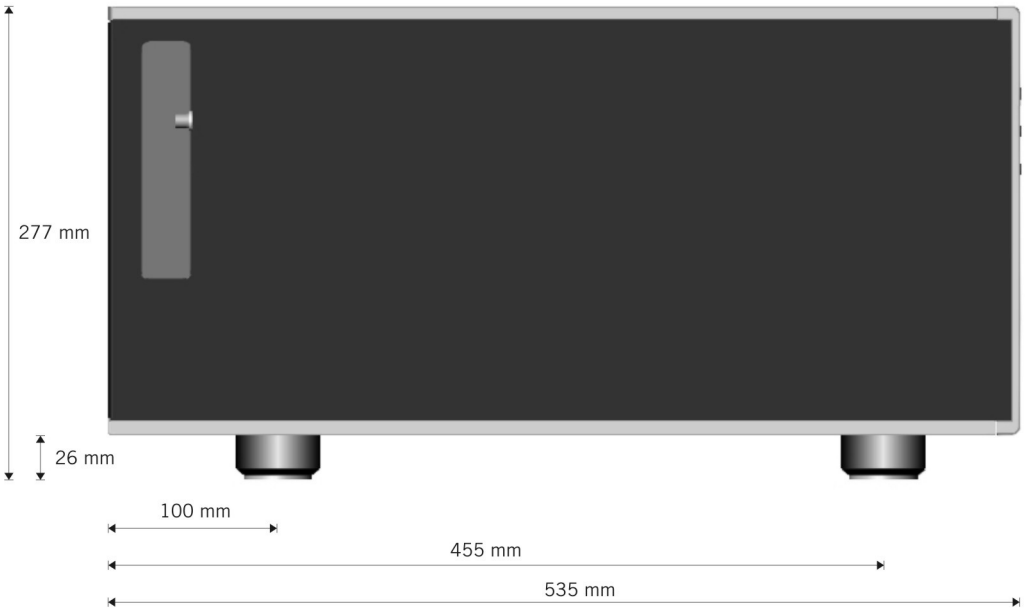
10 Technical data

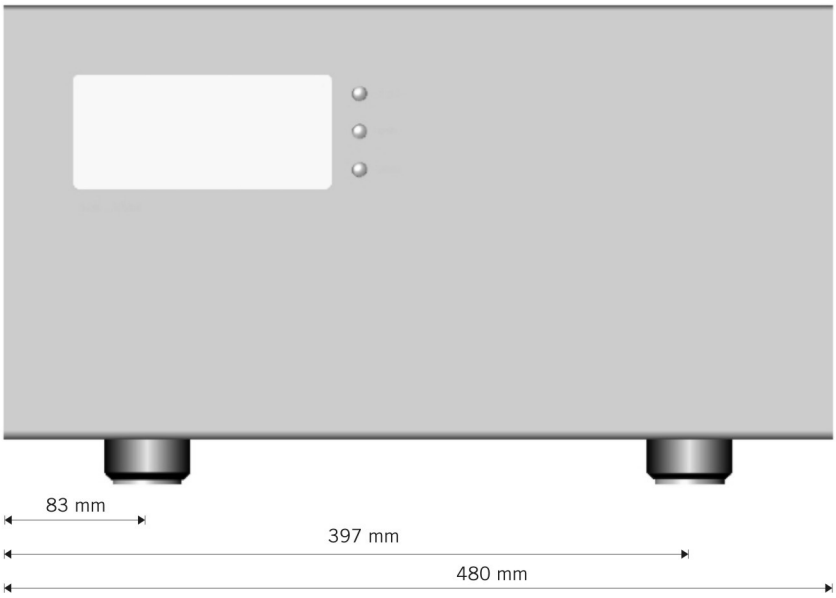
Specification		Data	
Model 230 V, 50-60Hz			
Nominal voltage	50-60Hz	230	V
Nominal power rating		2'300	W
Audio power rating	@ 8Ω	2 x 120	W
	@ 4Ω	2 x 240	W
	@ 2Ω	2 x 480	W
Model 220 V, 50-60Hz			
Nominal voltage	50-60Hz	220	V
Nominal power rating		2'200	W
Audio power rating	@ 8Ω	2 x 115	W
	@ 4Ω	2 x 230	W
	@ 2Ω	2 x 460	W
Model 120 V, 50-60Hz			
Nominal voltage	50-60Hz	120	V
Nominal power rating		1'920	W
Audio power rating	@ 8Ω	2 x 110	W
	@ 4Ω	2 x 220	W
	@ 2Ω	2 x 440	W
Model 100 V, 50-60Hz			
Nominal voltage	50-60Hz	100	V
Nominal power rating		1'600	W
Audio power rating	@ 8Ω	2 x 105	W
	@ 4Ω	2 x 210	W
	@ 2Ω	2 x 420	W
General power data			
Standby / OFF		<0.5	W
Idle consumption		ca. 200	W

Specification		Data	
Input			
Impedance	XLR	4.8	kΩ
	cinch	10	kΩ
Sensitivity		1.55	Vrms
Output			
Impedance		0.001	Ω
Output voltage max.		31	Vrms
Output current max.		60	A
Impulse rating		> 3'000	W
Performance			
Voltage amplification		+26	dB
Frequency response		DC-1	MHz
Slew rate		400	ns
THD+N		<0.0007	%
Signal to noise ratio		107	dB
Cross talk	@ 1 kHz	< -120	dB
	@ 20 kHz	< -100	dB
Damping factor (100Hz)		> 10'000	
Dimensions			
Dimensions		480x535x277	mm
Weight		ca. 80	kg

Technical specifications are subject to change without prior notification.

11 Dimensions





12 Definitions

Operating conditions

OFF	In operating condition OFF (stand-by) only the power supplies for the display and digital circuits are active. The power consumption accounts for ca. 12 Watts.
P ON (Protect ON)	After switch on (OFF -> ON) the power amplifier 710 gets first into operating condition P ON. The audio power supplies get started. As soon as constant conditions are reached and no errors are detected the amplifier changes into operating condition ON. If high-frequency or DC-offset is detected during operation the power amplifier 710 changes to P ON.
ON	In operation condition ON your amplifier is ready to reproduce music.
ERR1 (Error)	As soon as an error occurs the power amplifier 710 is switched off immediately. ERR1 represents an error occurred in the power supply of the audio channels. (electronic fuse)
ERR2 (Error)	ERR2 presents an error occurred in the audio channels themselves (e.g. overtemperature, overcurrent, etc.)
ERR3 (Error)	ERR3 represents an error occurred in the protection circuits of the audio channels.
LINK	The control of the start-up sequence is delegated to the preamplifier 720/721.
NORM	The control of the start-up sequence remains with the power amplifier 710 despite an eventually existing LINK-connection.

Labelling

SYM	Abbreviation for symmetrical connection.
XLR female	 1. Ground, 2. + Phase, 3. – Phase
ASYM	Abbreviation for asymmetrical connection.

Spemot AG

Industriestrasse 70

CH-4657 Dulliken

www.soulution-audio.com

info@soulution-audio.com

soulution

nature of sound

part.no. 92128