SACD-Player 746

User Manual

soulution

nature of sound

Dear client

We are proud that you decided yourself for a soulution SACD-Player 746. You have acquired a SACD-Player 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 SACD-Player 746 in your High Fidelity system. This user manual contains also useful tips for the optimisation of your over-all HiFi-System.

If there are any questions regarding the start-up or operation of your SACD-Player 746 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

Quick start

Unpacking	⇨ Unpack the 746 SACD-Player ⇨ Store the packing for future transportations ⚠ Treat the top class surface with care.
Positioning	⇨ Position the 746 SACD-Player on a stable base. ⚠ Cooling air must be able to escape unrestricted.
Cabling	⇨ Disconnect all components of your setup from the mains ⇨ Connect the 746 with your (pre)amplifier ⇨ Connect the 746 with your digital source components ⇨ Reconnect all components with the mains ⚠ While manipulating with cables the 746 SACD-Player has to remain disconnected from the mains.
Programming	⇨ Default values for all functions are programmed. ⇨ No additional settings are required.
Switch on	⇨ Switch on the 746 SACD-Player ⇨ Select moderate volume at the (pre)amplifier of the 746 ⇨ Switch on the source components and your amplifier ⚠ Check the cabling before you switch on.

1 Technical Highlights

1.1 Layout

The SACD-Player 746 has two housings, the Player itself and the External Power Supply.

CD-Player: The analogue circuits are physically separated from digital circuits. After the Sample-Rate-Converter unit the CD-Player is realized in pure dual mono layout. Shields between the different sections of the CD-Player effectively reduce interferences between them.

External Power Supply: The power supplies are located in a separate, external housing. This reduces potential interferences even further.

1.2 SACD/CD-mechanism

The SACD-Player 746 has a high quality SACD/CD-mechanism (Esoteric UMK-5). In order to reduce errors from vibrations the drive is mounted on rubber damping elements.

1.3 DSP (Digital Signal Processor)

A powerful DSP performs the calculations for the upsampling to 24Bit, 384kHz. The DSD data of a SACD is converted into PCM format during the upsampling process. The converted data is extrapolated by a 3rd order polynomial algorithm. Additionally this DSP performs computations for the volume control and the balance settings. Thanks to the 32Bit floating comma architecture of the DSP these calculations go without the usually increase of the quantification noise.

1.4 zero φ tech

The SACD-Player 746 incorporates the unique and innovative, DSP based Zero-Phase-Technology. Every digital to analogue converter requires an analogue low pass

filter in its output in order to suppress high frequency noise and aliasing signals, which adds phase shifts for higher frequencies. Despite its relatively high cut-off frequency of 120kHz, the analog 3rd order Bessel-filter of the 746 shows a phase shift of up to 15° in the audio band. A powerful DSP does pre-correct these potential phase errors in the digital signal. Once the signal passes the D/A converter stages and its related low pass filter these errors get cancelled out. The phase error of the resulting analog music signal remains below 1°, 20Hz - 100kHz! The Zero-Phase-Technology brings you even closer to the beauty of the source material!

1.5 Digital/Analogue-Converter (DAC)

The SACD-Player 746 has one DAC board per audio channel (left/right). We use the Burr-Brown 1792 DAC which guarantees excellent performance. Only the top quality converter section which runs up to 384 kHz of the chip is used. The internal up sampling section is bypassed!

The DACs are operated in dual mono mode. At the output of the converter chip four current signals (I1+, I1-, I2+, I2-) are available. The four current signals are not combined directly after the DAC but are first converted in a voltage signal and filtered. The I-V converter runs up to 100 MHz fast. The summig of the voltage signals is done on the output-stage board.

The digital section of DAC board is supplied by the digital power supply unit; the analogue section is supplied by the analogue power supply unit. This allows withholding noise present in the digital ground from the analogue section of the player.

1.6 Clock and PLL (Phase Lock Loop)

Utmost precision of the clock signal is a must have for a top class D/A-Conversion. The clock unit of the SACD-Player 746 runs at a precision of < 0.01ppm.

For the synchronisation to external digital data the clock/PLL must adapt itself very fast to eventual changes of the external data. This is done by a special digital clock circuit that allows synchronising its clock signal very fast and at the same time extremely precise to the incoming signal.

1.7 Output stage

The output stage is optimised for velocity, precision and impulse current rating. Thanks to its low output impedance of 2Ω and Class-A operation (40mA idle current) the output stage is stable on every load (also long cables are driven without problems). The theoretical maximal current rating of 3 amperes is limited to 1 ampere. This is realised with a protection circuit outside the signal path.

The output stage is a completely symmetrical design. For optimal performance of the unbalanced connection, the CD-Player has an additional unbalanced output section. This ensures the same sonic quality for both connection types.

Due to the output stages bandwidth of up to 40 MHz (-3 dB) all details of the music are reproduced naturally. The spatial reproduction gets really three dimensional and holographic (optimal recording prerequisite). The power of the output stage ensures that all these details are truly transmitted to your (pre)amplifier. Cable losses are minimised.

1.8 External Power Supply

The External Power Supply consists of three different power supply units which are physically and electrically separated. Additionally the three units are separated by the AC-Filter unit. Interferences between the different sections are minimized.

The supply voltages for the audio section are multi stabilised. We use an amplifier-like circuit working into a capacitor. The ultra stable supply voltage has a load-dependant deviation of 500 microvolt and a residual ripple < 0.01 microvolt. Solid copper bars distribute the supply voltages across the D/A-Converter board and the output stage.

The digital sections of the player require stable supply voltages alike. The supply voltages for the digital Inputs / Outputs, the DSP/Clock board, the PLL as well as for the digital section of the D/A-Converter are generated in a dedicated supply unit optimised for this function. The voltages are stabilised locally on the boards where they are needed.

The drive of the SACD-Player 746 has its own dedicated power supply unit. This guarantees that the drive can dispose over sufficient current when needed, at the same time there is no interference between the drive and the rest of the SACD-Player.

2 Safety advice: ⚠

User manual	⇨ Follow the safety advices ⇨ Keep this user manual.
Mains supply	Exclusively use 3 phase power cords with ground conductor. Unplug the 746 from the mains in the following cases: ⇨ before you manipulate with cables ⇨ before cleaning ⇨ during thunder storms ⇨ before you leave for longer periods
Cabling	While manipulating with cables the 746 has to remain disconnected from the mains. Wrong cabling may cause damages to your 746, (pre)amplifier and loudspeakers. Excessive volumes due to inappropriate handling may cause hearing damages.
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	In order to omit condensation of water inside your 746 SACD-Player, let it warm up within the packing. Please keep the original packing for future transports.
Operation	Never run your 746 SACD-Player ⇨ with opened housing ⇨ with closed cooling-slots ⇨ with high ambient temperatures (>40°C) ⇨ close to heat sources like radiators, etc. ⇨ with extremely high humidity for example in humid cellars ⇨ close to water (Sink, bathtub, or similar equipment)
Cleaning	Use a soft and dry towel. We suggest using a nonabrasive microfiber towel. Please do not use any solvents or liquidities
Service	Service by a qualified person required if ⇨ the mains-cable or the mains connectors are damaged ⇨ foreign substances or liquidity have entered the 746 ⇨ the 746 has seen rain ⇨ the 746 seems to malfunction ⇨ the 746 has fallen to the floor or the housing is damaged

3 Scope of delivery and packing

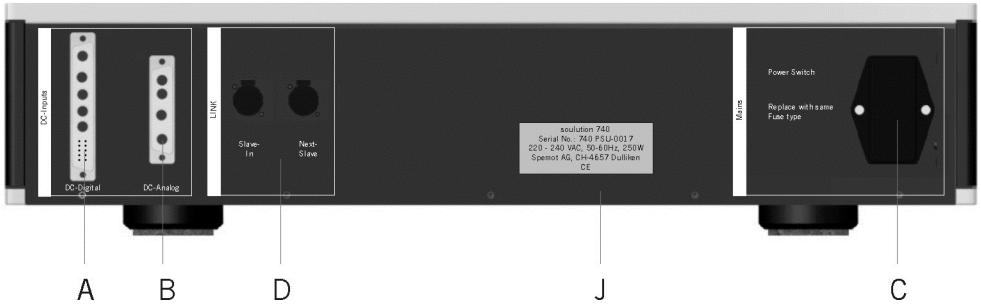
Please check the scope of delivery:

- ⇨ SACD-Player 746
- ⇨ External Power Supply 740PSU
- ⇨ Remote control (incl. batteries 2xAAA)
- ⇨ Mains cable
- ⇨ DC-Analogue cable
- ⇨ DC-Digital cable
- ⇨ User manual
- ⇨ Cotton gloves

Please store the packing of the SACD-Player 746 and the external power supply 740PSU for future transports. Check your SACD-Player 746 and the External Power Supply 740PSU for transport damages. In the case of damage, please contact your soulution dealer.

⚠ If the SACD-Player 746 and/or the External Power Supply 740PSU are still very cold from the transport please let them warm up within the packing, in order to omit condensation of water inside the units.

4 Rear panel of the External Power Supply 740PSU



Rear panel of the External Power Supply 740PSU

4.1 DC- Connectors between External Power Supply and CD-Player (A,B)

Connect the DC-Analogue and the DC-Digital of the External Power Supply 740PSU with enclosed high quality cables and the SACD-Player 746. Please secure the cables for tight fitting.

⚠ The External Power Supply 740PSU must be switched off while you are connecting the cables. The high current connectors could get damaged.

4.2 Mains (C)

Connect the External Power Supply 740PSU with the mains. The enclosed power cord is optimised for this application.

After switch-on of the External Power Supply 740PSU the standby power supply gets started. The display of the SACD-Player 746 shows "WAIT". As soon as constant conditions are reached the SACD-Player 746 changes to operating condition OFF (red LEDs in display).

Display after switch on of the mains

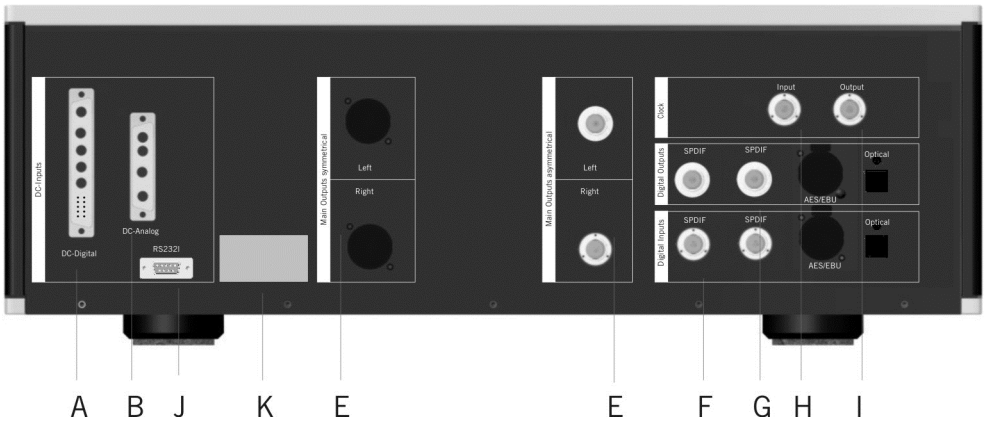

Display in operating condition OFF

⚠ Only switch-off the mains connection if your SACD-Player 746 is in operating condition OFF.

4.3 Link (D)

With the LINK-connection the preamplifier soulution 720/721 can control the switch-on of the SACD-Player 746. Connect the Master out 1 or Master out 2 of the preamplifier 720/721 with the Slave-In of the External Power Supply 740PSU. The Slave-out of the External Power Supply 740PSU allows connecting further soulution components.

5 Rear panel of the SACD-Player 746



Rear panel of the SACD-Player 746

5.1 Main-Out (E)

The SACD-Player 746 has symmetrical and asymmetrical connectors for the main output signal. Connect the output terminals with your (pre)amplifier. Due to the extraordinary load-stability of the output-stage there are no restrictions regarding the selection of the connecting cables.

We recommend using symmetrical cables. For short cable lengths also asymmetrical cables represent a high quality connection, top quality cable and optimal layout prerequisite.

⚠ Wrong cabling could damage your SACD-Player 746, your preamplifier, your amplifier or your loudspeakers. Excessive volumes due to inappropriate handling may cause hearing damages.

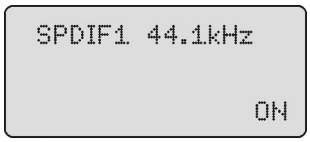
5.2 Digital-Output (F)

The SACD-Player 746 has 4 digital output connectors. (SPDIF 1 (RCA), SPDIF 2 (BNC), AES/EBU, Toslink). Connect your favourite digital output with the digital input of your external D/A-Converter.

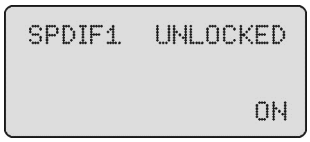
⚠ Wrong cabling could damage your 746, (pre)amplifier or loudspeakers. Excessive volumes due to inappropriate handling may cause hearing damages.

5.3 Digital-Input (G)

The SACD-Player 746 has four digital input connectors (SPDIF 1 (RCA), SPDIF 2 (BNC), AES/EBU, Toslink).If you activate one of the digital inputs the display will show the sampling frequency and the word length of the digital data.



Display for digital input signal at SPDIF1 with 44.1 kHz



Display if the external DataStream is interrupted

5.4 Clock-Output (H)

The high precision clock signal is available for the synchronisation of external digital appliances at the clock-out terminal. Connect the clock out (BNC) with the clock input terminals of your external component. The clock output of the SACD-Player 746 provides a word clock signal.

5.5 Clock-Input (I)

The SACD-Player 746 is able to receive Wordclock and Masterclock signals. For optimal adaptation to your clock generator the SACD-Player 746's clock input can be terminated with two different impedances.

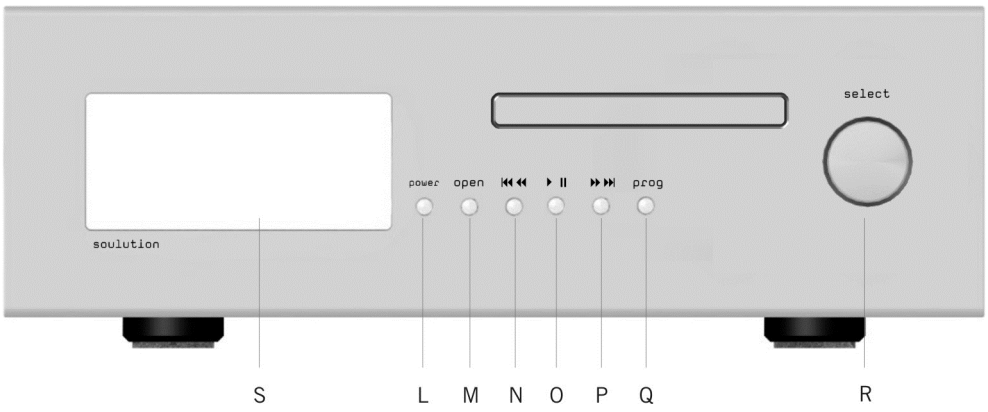
5.6 RS232 – Interface (J)

The SACD-Player 746 can be remote controlled through the RS232 interface.

5.7 Type label (K)

The type label shows the serial number and the nominal power consumption.

6 Front panel of the SACD-Player 746

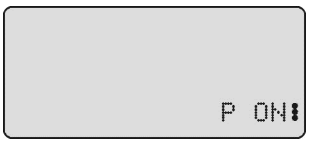


Front panel of the SACD-Player 746

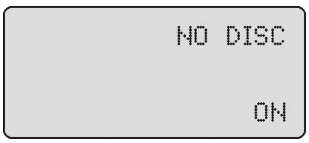
6.1 Power (L)

With the Power button you define the operating condition ON or OFF (red LEDs). In operating condition OFF the audio circuits are completely disconnected from the output terminal (Main-Out), the CD-drive and the digital sections remain deactivated. The Main-Out terminals are only activated if the SACD-Player 746 is ready for operation and if no errors are present.

Display in operating condition OFF

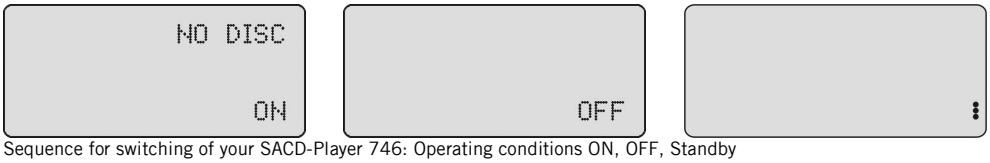


Display in operating condition PROTECT ON



Display in operating condition ON

We suggest switching the SACD-Player 746 to operating condition OFF (power consumption in < 0.5W) while not listening to music. Your SACD-Player 746 can easily be activated with the remote control.



Sequence for switching of your SACD-Player 746: Operating conditions ON, OFF, Standby

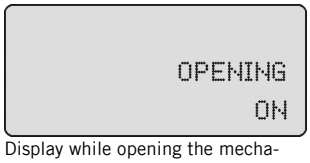
LINK-System:

If you have connected the LINK – System, your soulution preamplifier will control switch-on of the SACD-Player 746.

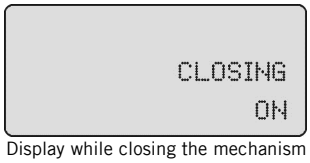
⚠ Unplug the External Power Supply 740PSU from the mains before you manipulate with cables, before you clean your SACD-Player 746, during thunder storms or before you leave for longer periods. Before you switch off the mains bring your SACD-Player 746 in operating condition OFF.

6.2 Open (M)

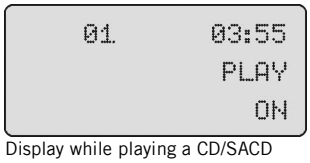
The Open button opens or closes the drawer of the SACD-Player 746. If a CD/SACD is playing the first push on the Open button will stop the mechanism, the second push will open the drawer.



Display while opening the mechanism



Display while closing the mechanism



Display while playing a CD/SACD

If the drawer and flap are hindered from closing by an object the mechanism will open again.

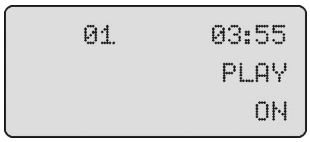
⚠ Never close the drawer by hand. Do not try to block the flap from closing and do not try to open it by hand.

6.3 Previous (N)

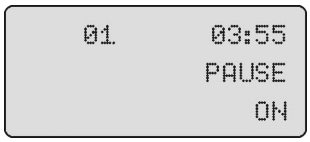
By tipping on the Previous button you can skip backwards through the tracks of the CD/SACD. While pressing the Previous button permanently the SACD-Player 746 performs the fast backward function.

6.4 Play / Pause (O)

The Play/Pause button switches the SACD-Player 746 between play and pause mode.



Display while playing a CD/SACD



Display while the mechanism is in pause.

6.5 Next (P)

By tipping on the Next button you can skip forward through the tracks of the CD. While pressing the Next button permanently the SACD-Player 746 performs the fast forward function.

6.6 Prog (Q)

The Prog button switches the SACD-Player 746 between operating-mode and programming-mode. In the programming-mode you may adjust the SACD-Player to your individual requirements.

6.7 Select (R)

The Select knob controls the functions Track select, Play/Pause, Open/Close and is used for the Programming.

6.7.1 Track select

Rotating the Select knob allows selecting a new track. Rotating to the right will increase the track number, rotating to the left will decrease the track number. After 3 seconds the newly selected track will be played.

6.7.2 Play/Pause

Pressing the Select knob for less than 0.5 seconds will switch the SACD-Player 746 between Play and Pause. If the drawer is open while pressing the Select knob for less than 0.5 seconds the drawer will be closed and the SACD-Player 746 starts to play track 1 of the inserted CD/SACD.

6.7.3 Open/Close

Pressing the Select knob for more than 0.5 seconds will Open or Close the drawer of the SACD-Player 746. If a CD/SACD is playing while pressing the Select knob the SACD-Player 746 is stopped and the drawer will be opened.

6.7.4 Programming:

In programming-mode the Select knob is used for the selection of the program-functions and the function values.

6.8 Display / IR-Receiver (S)

The display shows all relevant information for operating your SACD-Player 746. In operating mode the actual track, the playing time and the operating condition are shown.

The IR-receiver for the remote control is located in the lower left corner behind the display glass. For best reception do not place any objects in front of the display.

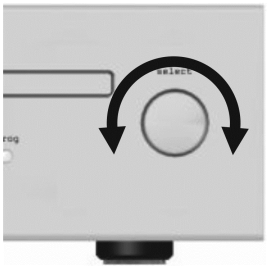
Never place your SACD-Player 746 on the front panel. The display glass could get scratched or even burst.

7 Programming

7.1 Overview

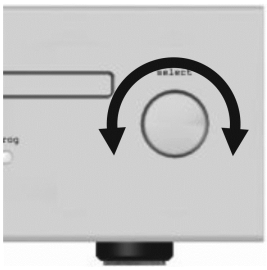
The available Program-functions allow adjusting the SACD-Player 746 to your individual High-Fidelity set-up.

Push on the Prog button switches the SACD-Player 746 between operating-mode and programming-mode. Timeout after 10 seconds.

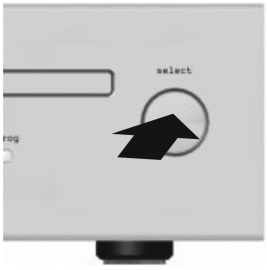


Rotating of the Select knob allows selecting the desired Program-Function

Push on the Select knob for approval of the selected function. Now the value domain of the selected Program-Function is active. (red LEDs in display).



Rotating of the Select knob allows for adjusting the desired value.



Push on the Select knob for approval of the respective value.

7.2 Program-Functions

Function	Values	Remarks
START-MODE LINK PROG	NORM, LINK	NORM ⇨ OFF (Standby) LINK ⇨ Depending on Link System
TIME-MODE TRCK-FWD PROG	TRCK-FWD, TRCK-BWD, DISC-FWD DISC-BWD	TRCK-FWD = Track time forward TRCK-BWD = Track time backward DISC-FWD = Disc time forward DISC-BWD = Disc time backward
REPEAT TRACK PROG	Track, Disc, Random, OFF	Defines repeat mode.
PHASE-POLARITY 180 PROG	0°, 180°	0° = no inversion 180° = left & right inverted
OUTPUT-SPDIF 1 ON PROG	ON, OFF	(De)activates the SPDIF 1 output
OUTPUT-SPDIF 2 ON PROG	ON, OFF	(De)activates the SPDIF 2 output
OUTPUT-AES/EBU ON PROG	ON, OFF	(De)activates the AES-EBU output

Function	Value	Remarks
OUTPUT-OPTICAL ON PROG:	ON, OFF	(De)activates the Optical output
LISTEN-INPUT CD PROG:	CD, RCA, BNC, AES/EBU, Toslink	Defines the input
RECORD-INPUT CD PROG:	CD, SPDIF 1, SPDIF 2, AES/EBU, Toslink, OFF	Defines which data shall be available at the digital outputs
CLOCK-OUTPUT ON PROG:	ON, OFF	Defines the Surround-IN. Volume and balance settings get ignored for this input.
CLOCK-INPUT ON-300 PROG:	ON-300, ON-75, OFF	ON-300 = 300 ohm ON-75 = 75 ohm
BRIGHTNESS 2 PROG:	1 = low 2 = medium 3 = high	Sets the brightness of the display
LOAD-DEFAULT YES PROG:		Loads the default values (bold) for all functions.

8 Remote control

Taste	Pre/DAC-Mode	CD-Mode
(1) IR-transmitter	Operation until 5m distance and angel of ±45°.	
(2,3) ▲ ▼	Volume +/-	
(4) DIM / ⏵⏸	Volume-Dim	Play/Pause
(5/6) ◀ ▶	Select +/-	Next / Previous track
(7) ↵	Enter Function for Program-Mode	
(8) P	(De)activates Program-Mode	
(9) 🔇	Mute	-
(10) ⏻	ON / OFF	
(11) ⏏	-	Open/Close
(12) PRE	-	Activates PRE-Mode
(13) CD	Activates CD-Mode	-

Change of Remote Ctrl ID:
Press the respective buttons for approx. 5 seconds.

⇨ ID 1: ◀ (6), ▶ (5), ⏻ (10)
⇨ ID 2: ◀ (6), ▶ (5), 🔇 (9)

Exchange of batteries (2 x AAA):

⇨ Open the battery tray on the rear side.
⇨ Insert the batteries into the tray as indicated.
⇨ Ensure correct polarity of the batteries.
⇨ Close the tray with corresponding screw.
⇨ Dispose the exhausted batteries

9 Trouble shooting

Error	Action
No display	Check the cabling to the mains supply. Eventually replace the fuse of the External Power Supply 740PSU.
No music	Check ⇨ the cabling to the source components and the amplifier. ⇨ if proper input has been selected ⇨ if the source component is in MUTE ⇨ if the amplifier is switched on
POWER FAIL	If the power supply to the audio channels is interrupted or an error in the power supply unit has occurred the SACD-Player 746 is shut down automatically. The display shows POWER FAIL.
OVERCURRENT	If the current at the Main-Out exceeds 1 ampere the SACD-Player 746 is shut down automatically. The display shows OVERCURRENT.

9.1 Actions after the appearance of an error

If you con not identify the error please disconnect the mains supply (before you disconnect the SACD-Player 746 has to be in operating condition OFF) and contact your soulution dealer.

10 Service

If your soulution SACD-Player 746 needs service please contact your soulution dealer. For further information see www.soulution-audio.com

11 Protection functions

Overcurrent	For currents > 1 Ampere at the output the 746 SACD-Player shuts down automatically.	
Power supply	The power supply is monitored for correct operation. In case of an error the 746 gets shut down automatically.	
Fuse	Model 220-240 V	2A/T 250V micro fuse 5x20mm
	Model 100-120 V	4A/T 250V micro fuse 5x20mm

12 Warranty

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

The guarantee is void if the SACD-Player 746 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 transport insurance.

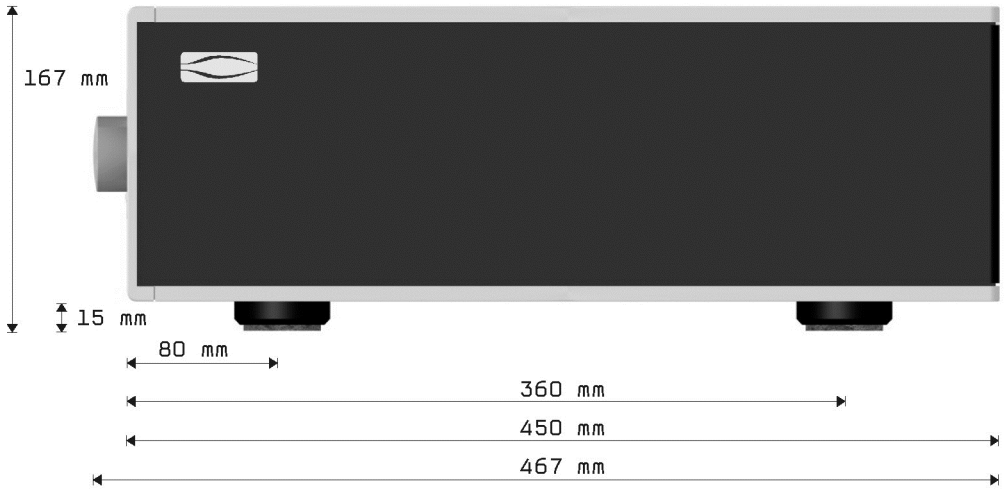
If you do not posses the original packaging no more please contact your soulution dealer.

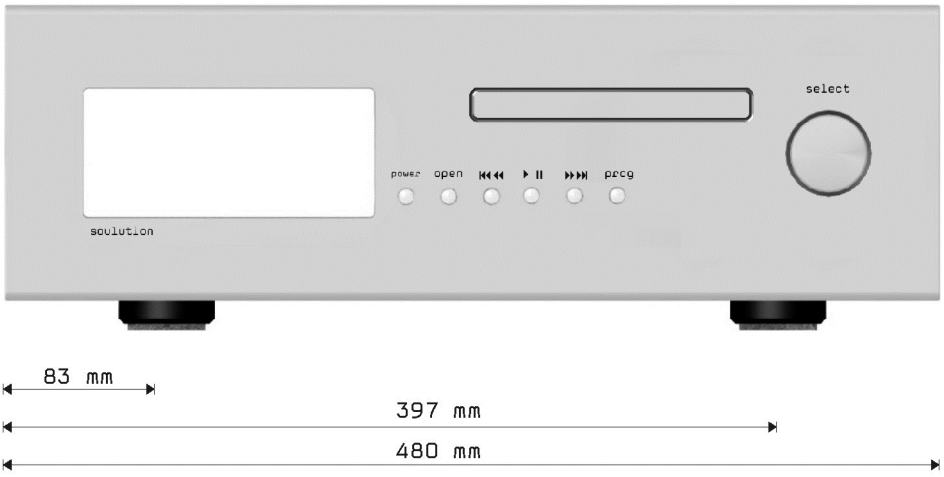
Basic repairs may be completed by your soulution dealer. Please clarify whether he is able to do the work before you send the SACD-Player 746 back to us.

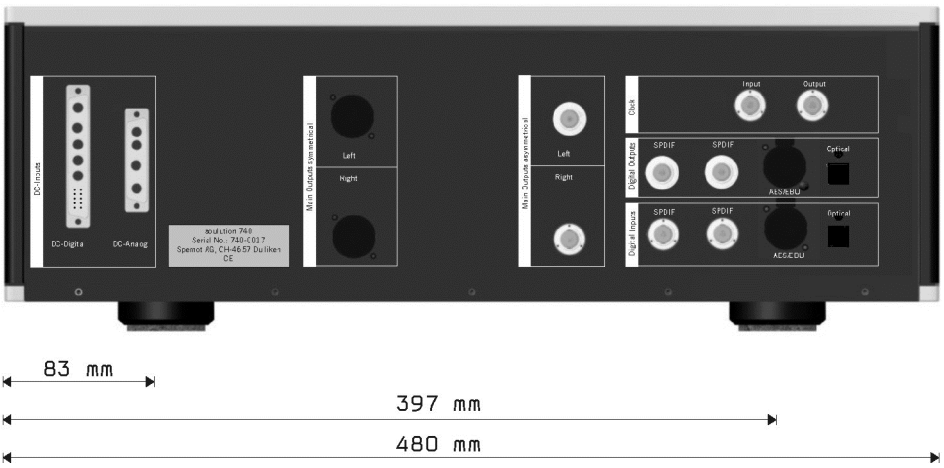
13 Specifications

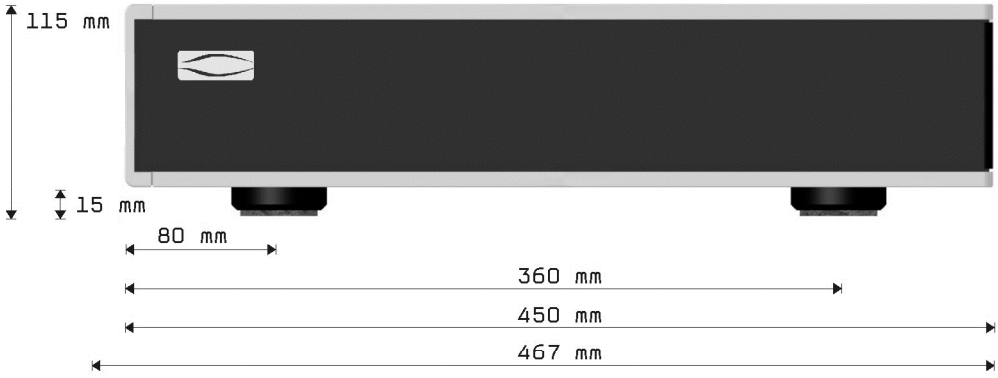
Specification		Data
Nominal voltage		
Model 220 – 240 V / 50 – 60 Hz		220 – 240 V
Model 100 – 120 V / 50 - 60 Hz		100 – 120 V
Power consumption		
OFF (standby)		< 0.5 W
ON		60 W
Main-Out		
Output voltage	symmetrical	2 Vrms
	asymmetrical	2 Vrms
Peak Output Current		1 A
Impedance	Main-Out symmetrical	2 Ω
	Main-Out asymmetrical	2 Ω
Frequency response	(depending on data format)	DC-100 kHz
Slew rate		200 Ns
Distortion (THD)		<0.0002 %
Signal to Noise Ratio		140 dB
Digital-Out		
Output-Voltage	S/PDIF	500 mV p-p
	AES EBU	5 V p-p
Output-Impedance	S/PDIF	75 Ω
	AES EBU	110 Ω
Digital-In		
Sensitivity		0.3 - 5 V p-p
Input-Impedance	S/PDIF	75 Ω
	AES EBU	110 Ω
Clock-Out		
Output-Voltage		5 V p-p
Output-Impedance		75 Ω
Clock-Out		
Sensitivity		0.3 - 5 V p-p
Input-Impedance		75 or 300 Ω
LINK-System		+12 V

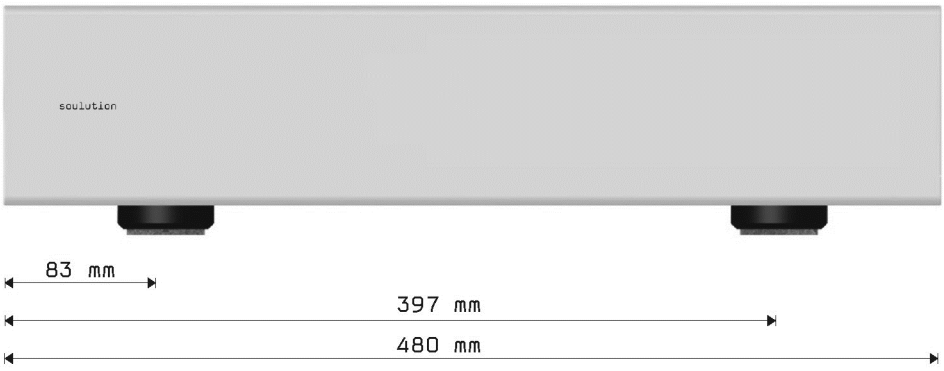
14 Dimension

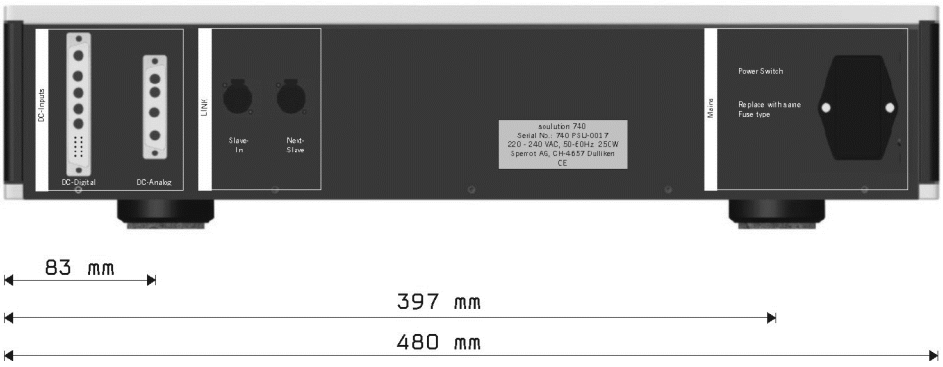







115 mm
15 mm
80 mm
360 mm
450 mm
467 mm


soulution
83 mm
397 mm
480 mm


DC-Inputs
DC-Digital
DC-Analog
LINK
Slave-In
Next-Slave
soulution 740
Power Switch
Replace with same Fuse type
Mains
83 mm
397 mm
480 mm

Spemot AG

Industriestrasse 70

CH-4657 Dulliken

www.soulution-audio.com

info@soulution-audio.com

soulution

nature of sound

part.no. 92134