soulution
nature of sound

7

717 power-amplifier

User manual

Dear client

We are proud that you have chosen a soulution power-amplifier. In doing so, you have acquired an audio component of outstanding quality with exceptional sonic performance which we are sure you will enjoy for many years to come.

It is important that you study this user manual carefully, step by step, before you install the 717 power-amplifier in your audio system. The manual contains information on how the power-amplifier works, relevant safety instructions and recommendations for optimizing your entire audio system.

If you have any questions regarding the installation, setup or operation of your 717 power-amplifier, please do not hesitate to contact your dealer.

Enjoy!

soulution Team

CE-Declaration of Conformity

Spemot AG declares that this product conforms to the following directives and standards:

Low Voltage Directive - LVD:	Directive 2014/35/EU
Electromagnetic Compatibility - EMC:	Directive 2014/30/EU
Restriction of Hazardous Substances – RoHS:	Directive 2011/65/EU

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 is found to cause unwanted or harmful interference to radio or television reception when switching on or off, the user is encouraged to take one or more of the following measures:

- adjust or relocate the receiving antenna of the affected appliance
- 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 your dealer or an experienced radio/TV technician for help

Disposal

According to Directive 2012/19/EU of the European Parliament, consumer electro-technical appliances must display the following symbol and must be disposed of separately. In the event of this component requiring disposal please do so in conformity with all locally applicable legal and environmental regulations.

Table of contents

1 Highlights

1.1 Layout

The 717 power amplifier (including the power supplies) was designed to be entirely dual-mono in its layout. The left and right amplifier channels each have their own PCB and are thus completely separated from each other.

1.2 Input stage

The innovative input stage of the717 power amplifier enables exceptional common mode rejection without compromising the input stage by introducing noise. This is achieved with parallelised instrumentation amplifiers designed for wide bandwidth (20MHz), lowest noise and optimal common mode rejection (CMMR >105dB). This ensures that even the faintest musical signals can be properly received by the 717 power amplifier.

1.3 Voltage amplification

For all amplifier designs with negative feedback more loopgain is better than a lot, provided that the design remains stable. With a bandwidth of more than 2 MHz, a loopgain of more than 120dB (DC) and an ultra linear feedback network, the 717 sets a new benchmark in terms of phase coherence and distortion.

1.4 Current stage

The current amplifier stage features 16 power transistors per channel operating in Class AB. A smart bias current control circuit measures the instantaneous current of each single transistor and controls its idle current ensuring optimal and identical operating conditions among all transistors. The 717's meticulous low level signal handling is paired with impressive raw power delivery. Short current pulses of 200A and more are readily attainable. For safety reasons the continuous current output is limited to 32A per channel.

1.5 Power Supply:

Four switched mode power supply modules, optimised for high peak-power rating (2'100W for 5 sec.), provide the power for the rail voltages of the amplifier stage. The regulated supply's output impedance remains extremely low over the relevant frequency range, rendering large storage capacitors unnecessary. Distributed local power supplies, with highly efficient DC-DC converters and extremely low-noise and fast linear regulators right next to the sink, power the small signal section of the 717. This keeps noise as low possible and signal paths as short as possible.

2 Safety advice:

User manual

⇨ Follow the safety advice
⇨ Keep this user manual

Mains supply

3 phase power cords with a ground conductor are mandatory.
Unplug the 717 from the mains:
⇨ before you adjust or manipulate mains cables
⇨ before cleaning the unit
⇨ during thunderstorms
⇨ when leaving the unit unused for longer periods

Cabling

Unplug the 717 from the mains while connecting or disconnecting cables. Incorrect cabling may cause damage to your 717, preamplifier or loudspeakers. Excessive volume due to inappropriate handling may cause hearing damage.

Transport

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

Packing

To avoid the formation of water condensation within the 717, allow it to reach room temperature before unpacking it. Keep the original packing safely for future transport requirements.

Operation

Never run your power amplifier 717
⇨ whilst the casing is open
⇨ with obstructed cooling slots
⇨ in high ambient temperatures (>40°C)
⇨ in proximity to heat sources like radiators, etc.
⇨ in areas of extreme humidity (for example in a humid cellar)
⇨ close to water (sink, bathtub, taps or similar facilities)

Cleaning

Use a soft dry towel. We suggest using a nonabrasive microfiber towel. Please do not use any solvents or liquids.

Service

Service by a qualified person will be required if
⇨ the mains cable or the mains connectors are damaged
⇨ foreign substances or liquids have entered the 717
⇨ if the 717 has been rained on
⇨ the 717 exhibits any form of malfunction
⇨ the 717 has been dropped
⇨ if the casing is damaged

3 Unpacking

Before opening, let the crate warm up to room temperature to prevent water condensation forming inside the unit.

Remove all screws (3-5 screws per side) and keep them.

Lift off the top cover by using the metal handles on the sides of the crate.

The 717 can now be easily accessed. Take care; the unit is heavy!

Original packing Please keep the original packing for future transport requirements. Always ship the 717 power-amplifier in its original packing.

4 Scope of delivery

- ⇨ 717 power-amplifier
- ⇨ IR remote control
- ⇨ Mains cable
- ⇨ Spare fuse
- ⇨ User manual

Please check the scope of delivery. If anything is missing or you notice any damage while unpacking, please contact your authorised dealer.

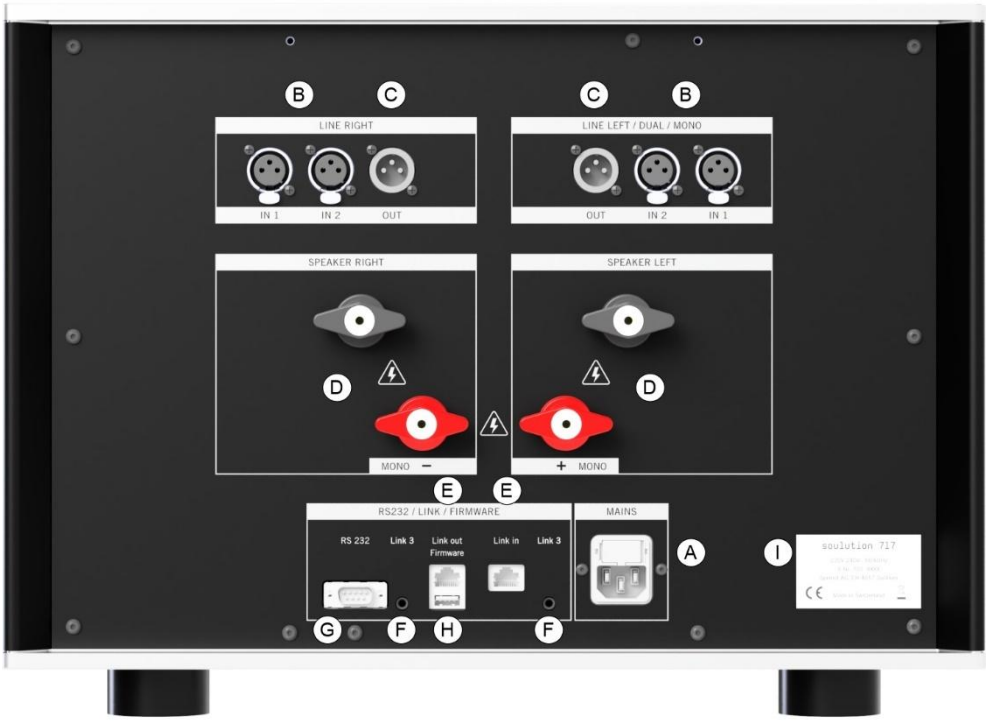
5 Setup

Remove the 717 power-amplifier carefully from the base of the wooden crate and position it on a stable surface in an appropriate location ensuring cooling air can circulate and escape unhindered. For optimal heat dissipation a clearance of at least 15cm to both sides, the top, the back and the front of the unit is mandatory. Do not cover the surface of the 717 power-amplifier with a cloth or any other object as the complete chassis acts as a heat sink.

The feet of the 717 power-amplifier feature a constrained layer damping system which will mitigate vibrations away from the unit. The damping system is designed to work on any surface material.

For best results, we suggest using a dedicated audio rack system for all of your audio components.

6 Rear and front view



Rear view of the 717 power-amplifier

A) AC mains input
B) Balanced inputs IN 1 … IN 2
C) Balanced Output
D) Loudspeaker terminals
E) LINK in, LINK out
F) LINK Series 3
G) RS232 – interface
H) Firmware
I) Type label

Front view of 717 power-amplifier

J) power button
K) mute button
L) input button
M) Display and IR eye

7 Connections

7.1 Mains supply (A)

Connect the 717 power-amplifier to the mains supply. Please use a high-quality power cable for optimal sonic results. The 717power-amplifier has no power switch. The device will enter standby mode as soon as it is connected to the mains supply.

⚠ unplug mains Always set the 717 to standby before unplugging it from the mains. Unplug the 717 power-amplifier from the mains supply
⇨ when left unused for longer periods
⇨ while adjusting the wiring of your audio system
⇨ during thunderstorms

7.2 Balanced inputs IN 1 ... IN 2 (B)

Connect your preamplifier or source devices to the 717 power-amplifier with high-quality balanced interconnect cables. For optimal results, we recommend keeping interconnect and power cables well separated from each other.

XLR-pin-out: pin1 = ground
pin2 = non-inverting input
pin3 = inverting input

⚠ Hot plugging Before changing the cabling of the 717 power-amplifier always put the unit in standby and disconnect it from the mains.

7.3 Balanced output (C)

The 717 power-amplifier features a balanced output. Additional amplifiers for a multi-amplification system may be connected through the 717's balanced outputs.

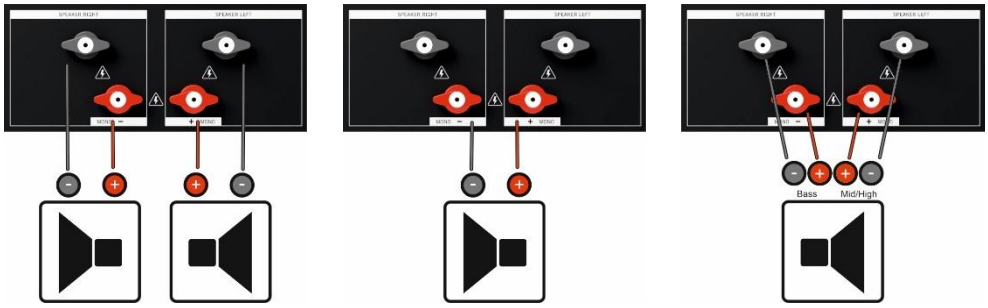
XLR-pin-out: pin1 = ground
pin2 = non-inverting input
pin3 = inverting input

⚠ Hot plugging Before changing the cabling of the 717 power-amplifier always put the unit in standby and disconnect it from the mains.

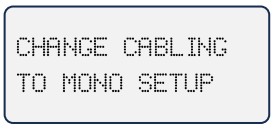
7.4 Loudspeaker terminals (D)

Set the desired amp-mode in the configuration functions. The 717 will automatically switch off when the amp-mode gets changed. Please connect the 717 to the loudspeakers according to the scheme below and the selected amp-mode.

STEREO MONO DUAL



If the amp-mode has been changed, the 717 will ask for confirmation (press enter button on the IR-remote control) that the cabling has been changed accordingly during the next power-up phase.



Display during power-up phase

Confirm

⚠ Connection Check the connectors for tight fit. Check the cables for eventual damages. Short circuits provoked by thin threads from loudspeaker cables may cause fire.

⚠ Hot plugging Before changing the cabling of the 717 power-amplifier always put the unit in standby and disconnect it from the mains.

7.5 LINK in, LINK out (E)

The LINK connection (RJ45- CAT 5 cable) allows all connected soulution devices to be switched on and off centrally. Do not connect the LINK in or LINK out to your network (LAN). The 717 power-amplifier does not feature any LAN connectivity.

7.6 LINK Series 3 (F)

Connect the LINK Series 3 socket to the Link-Com socket on your Series 3 unit. Series 3 units connected to the 717 power-amplifier via this interface can be centrally switched on and off. Use cables with 3.5mm audio jacks. The LINK Series 3 connection does not convey any audio signal.

7.7 RS232 – interface (G)

The RS232 interface allows home automation systems to control all functions of the 717 power-amplifier and to read relevant information about the unit's operating status.

7.8 Firmware (H)

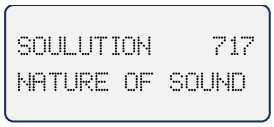
The USB input is provided for firmware updates only. For detailed instructions please refer to section 11 Firmware Update.

8 Operation

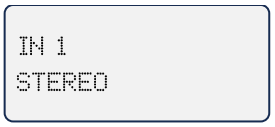
8.1 power (J)

The power (K) button turns on the 717 power-amplifier. The start-up sequence takes a short while as the power supplies for the different sections of the circuit are initiated. Once the unit is ready to operate the display (O) will show the active input and the amplification mode.

Standby



Power-up sequence

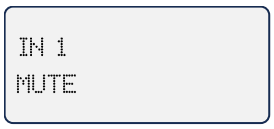


Ready to operate

If the 717 power-amplifier is on, the power (K) button will put the unit back into standby (power consumption <1W).

8.2 mute (K)

The mute (L) button mutes the output of the 717 power-amplifier.



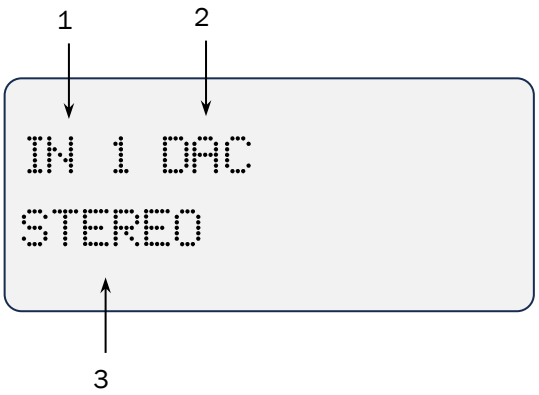
Mute

8.3 input (L)

The 717 power-amplifier features two balanced inputs. Pressing the input button toggles between the two inputs.

8.4 Display (M)

Normal mode



1) Selected input: IN 1 and IN 2
2) Name of the selected input: INx: NAME
3) Selected amplification mode or MUTE

Configuration mode

4) Configuration function
5) Value of function
6) LEDs are lit whilst values are changeable

9 Configuration

The 717 power-amplifier as well as the IR remote control are set to the remote-ID „Pre 2“. If you deactivate the reception of IR signals for the 717 with the configuration function REMOTE-ID, the configuration functions remain accessible through the IR remote control (Remote ID: „Pre 2“).

Press the **P button** (Prog) for switching 717 power-amplifier to configuration-mode.

The ◀ ▶ **buttons** allow selecting the desired configuration-function

Press the ↵ **button** (Enter) to activate the value domain of the selected configuration-function (red LEDs in display).

The ◀ ▶ **buttons** allow for adjusting the value of the selected configuration-function.

Press the ↵ **button** to approve the selected value.

Function	Values	Remarks
START-INPUT IN 1	**IN 1**, IN 2,	Defines which input is to be activated when the unit is switched on.
AMP-MODE STEREO	**STEREO**, MONO, DUAL	Defines the amplification mode. If the amp-mode gets changed, the 717 will power down automatically.
IN 1: NAME PRE	**OFF,** PRE, PRE1, DAC, PHONO, TAPE, etc.	Input IN 1 can be individually named.
IN 2: NAME PHONO	**OFF,** PRE, PRE1, DAC, PHONO, TAPE, etc..	Input IN 2 can be individually named.
BRIGTHNESS HIGH	DISPLAY OFF, LOW, MEDIUM, **HIGH**	The brightness can be adjusted in three levels. When set to display off, the display switches off about 15 seconds.
REMOTE ID Pre1	Pre1, **Pre2**	The remote ID of the 717 is defined. The remote ID of the IR remote control must match (see page 17).
LOAD DEFAULT YES		Activates the default values **(shown in bold)** for all the functions.
FIRMWARE VERSION v1.042		Displays the firmware version of the unit.

10 Remote control

Button	Pre-Modus	CD-Modus
(1) **IR-transmitter**	Operation up to 5m distance and at an angle 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 three buttons simultaneously for approximately 5 seconds:

- ⇨ Preamplifier ID 1: ◀ (6), ▶ (5), ⏻ (10)
- ⇨ Preamplifier ID 2: ◀ (6), ▶ (5), 🔇 (9)
- ⇨ Phono ◀ (6), ▶ (5), ↵(7)
- ⇨ DAC ◀ (6), ▶ (5), **P** (8)

Replacing the batteries (2 x AAA):

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

11 Firmware Update

USB-Stick:

The firmware of all soulution products can be updated via the USB port on the back panel. To update firmware, please prepare a USB stick (FAT32 formatted, UBS2.0) containing the required firmware data.

You can find the latest firmware for your 717 power-amplifier on our website www.soulution-audio.com. Unzip the downloaded .zip file and copy the firmware files to the root directory of the USB stick. Make sure there are no other files or folders on the USB drive.

Update-process:

- ⇨ Prepare the USB stick with the firmware files (no other files should be present).
- ⇨ Unplug the unit from the mains supply.
- ⇨ Insert the USB stick into the USB interface "Firmware".
- ⇨ Connect the unit to the mains supply.
- ⇨ Follow any instructions in the display.
- ⇨ Once the new firmware has been loaded, the 717 will be in standby mode.
- ⇨ Power up the 717 power-amplifier.
- ⇨ Press the prog button.
- ⇨ Select configuration function LOAD-DEFAULT and confirm with YES.
- ⇨ Configure the 717 power-amplifier to suit your requirements.

12 Protections

Protection circuits monitor both the input and output signals permanently. If either signal exceeds the limits for safe operation, the 717 will switch to protection mode. The amplifier output will be muted and all inputs and outputs will be disconnected from the amplifier. Provided that the input and output signal are within the limits for safe operation, the 717 will revert to normal operation after about 5 seconds.

12.1 INPUT HIGH FREQUENCY PROTECT

Display

PROTECT IN HIGH FREQ L	PROTECT IN HIGH FREQ R	PROTECT IN HIGH FREQ LR
left channel only	right channel only	both channels

Trigger:
- ⇨ The input signal contains frequencies that are too high. (> 300 kHz and > 100 mV peak and > 10 ms).

Root cause:
- ⇨ Preamplifier emits clicks when inputs or volume is changed.
- ⇨ RF noise is picked up by interconnect cables.
- ⇨ Digital source without analogue low pass filter in the output.

Measures:
- ⇨ check if the preamplifier or source does output HF signals
- ⇨ check the cabling to your preamplifier/source
- ⇨ use shielded interconnect cables for high gain sources
- ⇨ use digital source with analogue reconstruction filter

12.2 INPUT OVERLOAD PROTECT

Display

PROTECT IN OVERLOAD L	PROTECT IN OVERLOAD R	PROTECT IN OVERLOAD LR
left channel only	right channel only	both channels

Trigger:
- ⇨ The amplitude of the input signal is greater than 2.3 V peak.

Root cause:
- ⇨ The output signal of the preamplifier or source is too high

Measures:
- ⇨ reduce the volume of your preamplifier
- ⇨ adjust the output level of your source component

12.3 INPUT DC PROTECT

Display

left channel only | right channel only | both channels

Trigger:
- ⇨ The input signal contains infrasonic content with a frequency < 0.2 Hz and an amplitude > 0.1 V peak.

Root cause:
- ⇨ Preamplifier or source is emitting infrasonic signals
- ⇨ Turntable outputs infrasonic signal (warped record, floor vibration, tonearm resonance, etc.)

Measures:
- ⇨ If available activate subsonic filter

12.4 OUTPUT OVERLOAD PROTECT

Display

left channel only | right channel only | both channels

Trigger:
- ⇨ Output current > 32 A for more than 10 ms.

Root cause:
- ⇨ Output shorted
- ⇨ Loudspeaker impedance too low (< 1.5 ohm)
- ⇨ Damaged loudspeaker cable

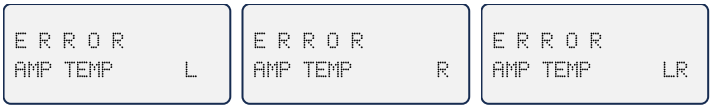
Measures:
- ⇨ Check the loudspeaker cable for short cut
- ⇨ Check the loudspeaker impedance
- ⇨ Try with another loudspeaker cable

13 Errors

In case abnormal operation is detected, the 717 will change to error mode. The amplifier output is set to mute, all inputs and outputs get disconnected from the amplifier, and the unit will power down. The display shows the error that has occurred.

13.1 TEMPERATUR

Display



left channel only | right channel only | both channels

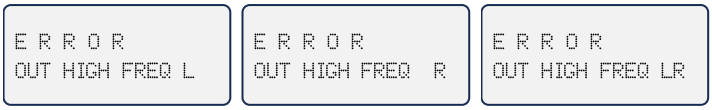
Trigger:
- ⇨ Temperature inside the amplifier exceeds 70°C

Root cause:
- ⇨ Cooling air cannot escape unhindered
- ⇨ Ambient temperature too high
- ⇨ Load impedance to low

Measures:
- ⇨ Switch off the amplifier and let it cool off and try again
- ⇨ Position amplifier in different place

13.2 OUTPUT HIGH FREQUENCY

Display



left channel only | right channel only | both channels

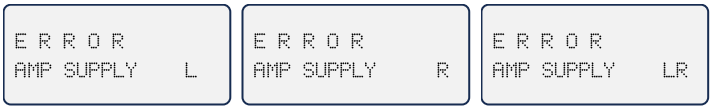
Trigger:
- ⇨ Output signal contains too high frequencies (> 300 kHz and > 20 V peak).

Root cause:
- ⇨ Input signal with very short pulses
- ⇨ electrostatic discharges
- ⇨ Preamplifier emits clicks when inputs or volume is changed
- ⇨ hot plugging of cables
- ⇨ Advert combination of loudspeaker cables and loudspeakers

Measures:
- ⇨ Power up and try again
- ⇨ Try with other loudspeaker cables

13.3 AMP SUPPLY

Display



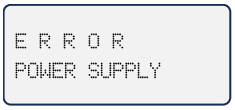
left channel only | right channel only | both channels

Trigger: ⇨ Failure on the amplifier board

Measures: ⇨ disconnect the 717 from the mains supply
⇨ inform your dealer and apply for repair service

13.4 POWER SUPPLY

Display



Trigger: ⇨ Failure on the PSU board

Measures: ⇨ disconnect the 717 from the mains supply
⇨ inform your dealer and apply for repair service

14 Troubleshooting

No Display
⇨ check the mains connection
⇨ check the fuse of your house installation
⇨ check the fuse of the power amplifier 717
⇨ check the BRIGHTNESS setting (DISPLAY-OFF)

No music
⇨ check the cabling of your audio system
⇨ check whether the correct input is selected
⇨ check whether the source component is muted
⇨ check whether the preamplifier is switched on
⇨ check whether the power amplifier is muted

15 Service

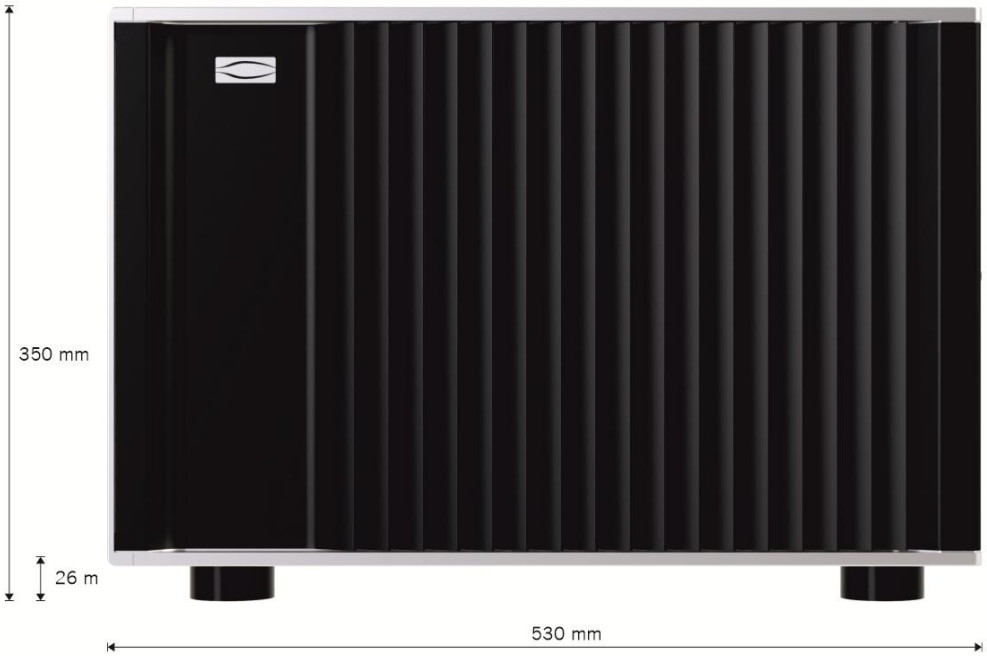
If your 717 power amplifier needs servicing, please disconnect it from the mains supply and contact your authorised soulution dealer.

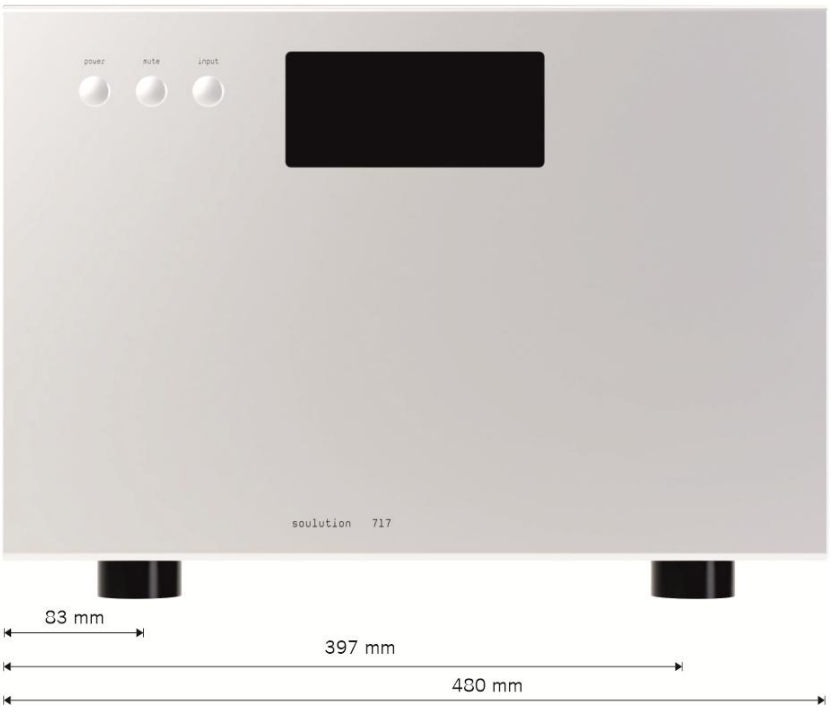
16 Specifications

Power rating		**Mono**	**Stereo/Dual**
@ 8Ω		600 W	2 x 150 W
@ 4Ω		1'200 W	2 x 300 W
@ 2Ω (minimal load impedance)		2'400 W	2 x 600 W
Gain		32.5 dB	+26.5 dB
Mains			
Voltage			86 – 263 VAC
Frequency			50 – 60 Hz
Consumption	Standby / OFF		< 1 W
	Idle		ca. 200 W
Input			
Impedance			4 MΩ
Sensitivity			1.65 Vrms
Output			
Impedance	@100Hz		< 0.001 Ω
Voltage max.			50 V
Current max. continuous			32 A
Peak current < 1ms duration			> 200 A
Impulse rating < 1ms duration			> 10'000 W
Performance			
Frequency response			DC – 2 MHz
Phase response	@20kHz		< -1 °
THD	@1kHz, 8Ω		< -110 dB
Common Mode Rejection			> 100 dB
Signal to noise ratio	20 Hz – 20kHz		> 107 dB
Noise density (input related)			< - 160 dBV/$\sqrt{Hz}$
Channel separation	@ 1kHz		< -110 dB
Damping factor	@ 100Hz		> 10'000
Dimension	W x D x H		480x530x350 mm
Weight			approx... 50 kg

Technical specifications are subject to change without prior notification.

17 Dimension sheet





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nature of sound

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