soulution
nature of sound

3

331 integrated amplifier

User manual

Dear client

We are proud that you have chosen a soulution integrated 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 331 integrated amplifier in your audio system. The manual contains information on how the 331 integrated 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 331 integrated 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 2014/35/EU

Electromagnetic Compatibility 2014/30/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 Power amplifier

At its core is an innovative voltage amplification stage that consists of linearized amplifiers operating up to a cut-off frequency of 80MHz. Current amplification is done in three stages, each with a narrow, almost linear operating range.

1.2 Power supply

Four switched mode power modules with multistage filter networks provide the required power for the amplifier. Induction of noise is omitted by physical separation from the amplifier boards and effective shielding. Switched mode power supplies provide supply voltages that are more stable and lower in noise than other power supply technologies.

1.3 Volume control

Relays switched precision resistors form the volume control for the left and right channel. A parallel volume control path based on a Programmable Gain Amplifier (PGA), only active when the volume is changed, ensures click free volume changes.

1.4 Multiamp-Mode

Two or more 331 integrated amplifiers may be combined to a Bi- or Multi-Amp setup. The audio signal of the active input is directly bypassed to the Source-Out connectors, no changes on volume or balance. The Link-Com interface allows the units in the Multi-Amp setup to align their settings for the volume, balance and changing to the required inputs.

1.5 Surround- Mode

The 331 may as well be integrated in an Audio/Video system. One input can be defined as surround input. Volume and balance settings of the 330 integrated amplifier will be ignored for the surround input.

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 331 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 331 from the mains while connecting or disconnecting interconnect cables. Incorrect cabling may cause damage to your 331 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 331, allow it to reach room temperature before unpacking it. Keep the original packing safely for future transport requirements.

Operation

Never run your 331
⇨ 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 and 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 331
⇨ if the 331 has been rained on
⇨ the 331 exhibits any form of malfunction
⇨ the 331 has been dropped
⇨ if the casing is damaged

3 Scope of delivery

- ⇨ 331 integrated amplifier
- ⇨ IR remote control
- ⇨ Mains cable
- ⇨ Spare fuses
- ⇨ User manual
- ⇨ Set of shims

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

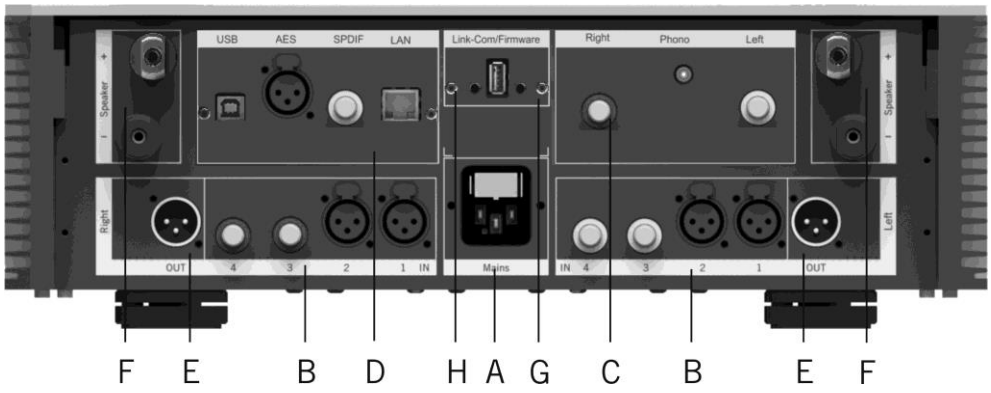
4 Setup

Remove the 331 integrated amplifier carefully from the cardboard boxes and position it on a stable surface in an appropriate location ensuring cooling air can circulate and escape unhindered. Do not cover the surface of the 331 integrated amplifier with a cloth or any other object as the complete chassis acts as a heat sink.

The feet of the 331 integrated 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. The feet shims are used in case the surface of your audio rack is not perfectly in level.

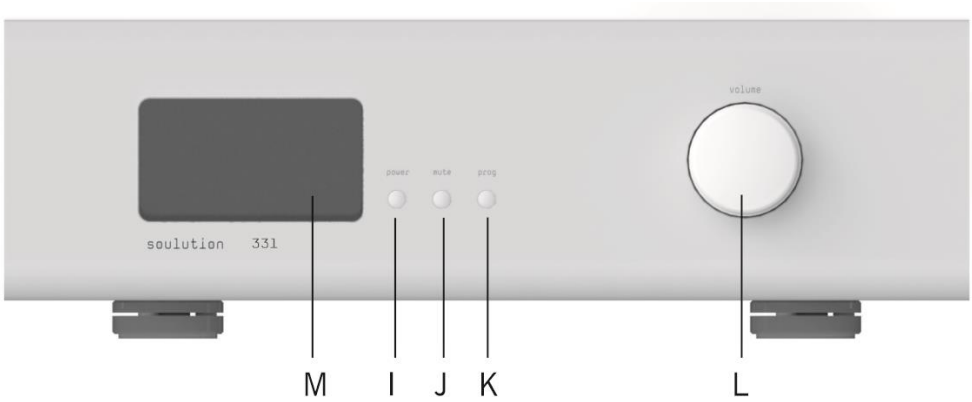
For best results we suggest using a dedicated audio rack system for all of your audio components.

5 Rear and front view



Rear view of the 331 integrated amplifier

A) AC mains input
B) Inputs IN 1 ... IN 4
C) Phono MC optional
D) D/A converter optional
E) Source output
F) Speaker
G) Link-com
H) Firmware



Front view of the 331 integrated amplifier

I) power button
J) mute button
K) prog button
L) Rotary knob
M) Display and IR eye

6 Connections

6.1 AC mains input (A)

Connect the 331 integrated amplifier to the mains supply. Please use a high-quality power cable for optimal sonic results. The 331 has no power switch. The device will enter standby mode as soon as it is connected to the mains supply.

⚠ unplug mains

Unplug the unit from the mains supply when
⇨ left unused for longer periods
⇨ adjusting the wiring of your audio system
⇨ during thunderstorms
⇨ Set the 331 to standby before unplugging it from the mains.

6.2 Inputs IN 1...IN4 (B)

Connect your source devices to the 331 integrated amplifier with high-quality cables. For long cable runs, we recommend balanced cables. For best results, we recommend separating the interconnect cables from the power cables.

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

RCA-pin-out:
cold pin = ground
hot pin = non-inverting input

⚠ Clipping

Make sure that the maximum output voltage of your source devices does not exceed the maximum input voltage of the 331 integrated amplifier. The MAX-VOL function allows you to protect your audio system from excessive volume and your 331 integrated amplifiers from clipping.

⚠ Hot plugging

Before you change the cabling of the 331 integrated amplifier always revert the unit in standby and disconnect it from the mains.

6.3 Phono MC optional (C)

Connect your turntable (MC cartridge) to the unbalanced phono input of the 331 integrated amplifier. The termination impedance can be optimally adjusted to your cartridge via the configuration functions.

If required, the high-pass filter according to RIAA-IEC (-3dB @ 20Hz) can be activated with the configuration function PHONO-HP. A high-grade ground terminal at the rear panel of the 331 ensures optimal ground connection to your turntable if required.

⚠ **Line level:** Never connect a line-level source component to the phono input. Excessive input levels will cause clipping and overheating of the phono preamplifier.

⚠ **Hot plugging** Before you change the cabling of the 331 integrated amplifier always revert the unit in standby and disconnect it from the mains.

6.4 D/A-converter optional (D)

The digital-to-analog converter features network, USB, SPDIF and AES/EBU inputs. A powerful DSP converts all digital signals to DXD, the zerophase technology ensures minimal phase errors along signal path.

AES/EBU and SPDIF

File format	Bit depth	Sampling rate
PCM (WAV, AIFF, FLAC, etc.)	16 - 24 bit	32 – 192 kHz
DSD (DoP)	1 bit	2.82 – 5.64 MHz

USB

The readable file formats depend mainly on the used player software. The following formats can be received by the 331's D/A-converter USB input:

File format	Bit depth	Sampling rate
PCM (WAV, AIFF, FLAC, etc.)	16 - 24 bit	32 – 192 kHz
DSD (DoP)	1 bit	2.82 – 5.64 MHz

The 331's USB input supports USB Audio Class 2.0. For operating systems such as Mac OS X, it supports driver free playback up to 24bits/192kHz. Under Windows 8 and lower a specific USB Audio Class 2.0 driver is required for playback of files with sampling rates > 96kHz.

Network

The 331's network input will be recognized as „UPnP™ AV/DLNA Media Renderer device" and can be accessed from your media server.

File format	Bit depth	Sampling rate
FLAC (Free Lossless Audio Codec)	16-24 bit	44.1 – 192 kHz
WAV (Waveform Audio File Format)	16-24 bit	44.1 – 192 kHz
MP3 (Mpeg Audio Layer 3)	16-24 bit	44.1 – 192 kHz
ALAC (Apple Lossless Audio Codec)	16-24 bit	44.1 – 192 kHz
AAC (Advanced Audio Coding)	16-24 bit	44.1 – 192 kHz
AIFF (Audio Interchange File Format)	16-24 bit	44.1 – 192 kHz
DSF and DFF (DSD stream file)	1 bit	2.82 – 5.64 MHz
DXD (Digital eXtreme Definition)	24 bit	352.8 kHz

6.5 Source-Out (E)

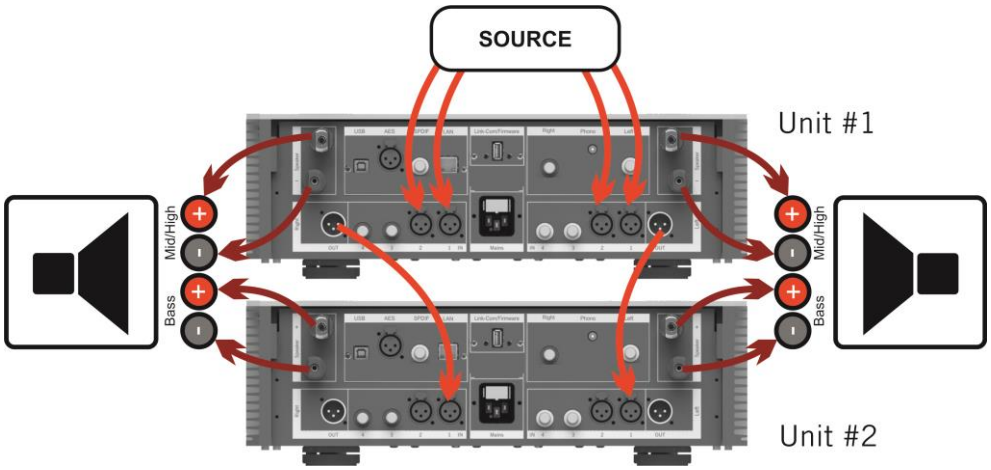
The audio signal of the selected input is bypassed unaltered to the source-out connectors (no volume-control, or balance). Two or more 331 integrated amplifiers may be combined to a Bi- or Multi-Amp setup.

⚠ **no volume control:** The output signal at the Source-Out is **not attenuated**. Never connect amplifiers without volume control to the Source-Out. Excessive volumes may cause hearing damages or may damage your loudspeakers.

6.6 Speaker (F)

Its exceptional load stability and peak current capabilities allow the 331 integrated amplifier to drive any loudspeaker. If your loudspeakers should ask for more power than 331 can provide, several units can be combined to a Multi-Amp setup. All 331s in Multi-Amp setup must be connected with the Link-Com interface.

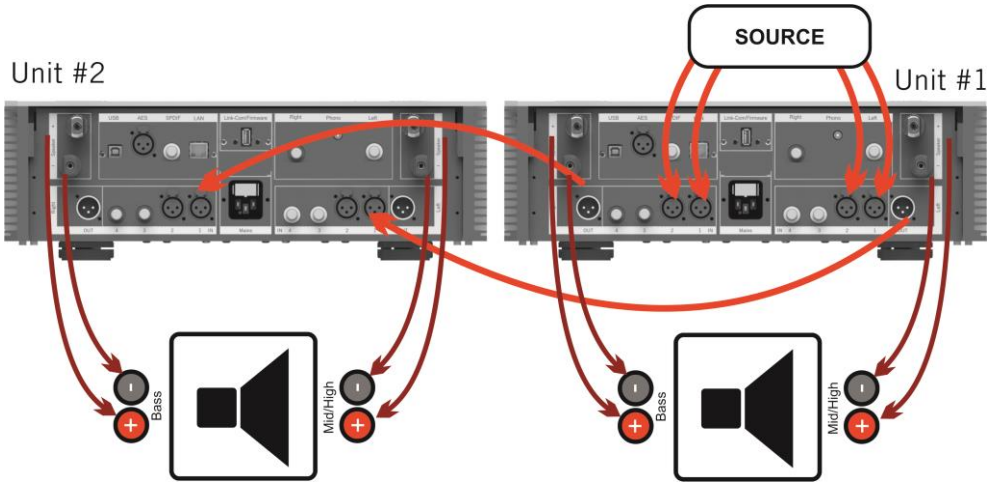
Multi-Amp mode: Stereo



	Function	Values	Remarks
Unit #1	MULTI-AMP	M-AM ST	Multi-Amp mode: Stereo
	SRC-TYPE	SRC L&R	Source-Type: Left & Right
Unit #2	MULTI-AMP	M-AM ST	Multi-Amp Mode: Stereo
	SRC-TYPE	SRC OFF	Source-Type: OFF Input IN1 is always active

The left channels of the 331 integrated amplifiers get connected to the binding posts of the left loudspeaker, right channels to the right loudspeaker. Ensure correct settings and cabling of all 331s before you power up. All source components get connected to unit #1 (Source-Type: L&R). The left Source-Out of unit #1 has to be connected to input IN 1 of unit #2, likewise for the right channel. All 331 integrated amplifier with no source components connected must be set to Source-Type OFF.

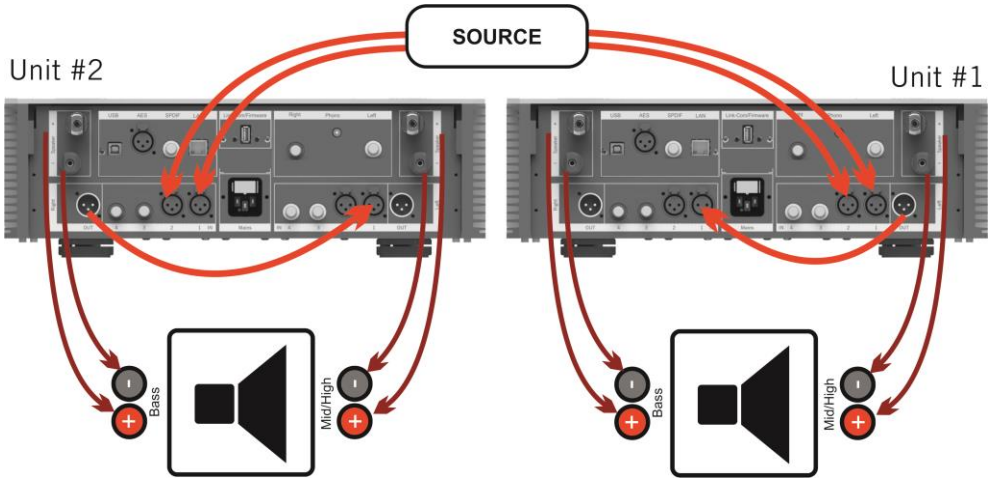
Multi-Amp mode: Mono (option 1)



	Function	Values	Remarks
Unit #1	MULTI-AMP	M-AM ML	Multi-Amp Mode: Mono Left
	SRC-TYPE	SRC L&R	Source-Type: Left & Right
Unit #2	MULTI-AMP	M-AM MR	Multi-Amp Mode: Mono Right
	SRC-TYPE	SRC OFF	Source-Type: OFF Input IN1 always active

Both channels of the 331 integrated amplifier will be used for powering the left or the right loudspeaker. Left and right channels of the source components may either be both connected to one of the two 331s or the left channel to the “left” unit and right channel to the “right” unit. Ensure correct settings and cabling of all 331s before you power up. Settings for multi-amp mode mono, both channels of the source components connected to the left amplifier channel.

Multi-Amp mode: Mono (option 2)



	Function	Values	Remarks
Unit #1	MULTI-AMP	M-AM ML	Multi-Amp Mode: Mono Left
	SRC-TYPE	SRC M-L	Source-Type: Left channel
Unit #2	MULTI-AMP	M-AM MR	Multi-Amp Mode: Mono Right
	SRC-TYPE	SRC M-R	Source-Type: Right channel

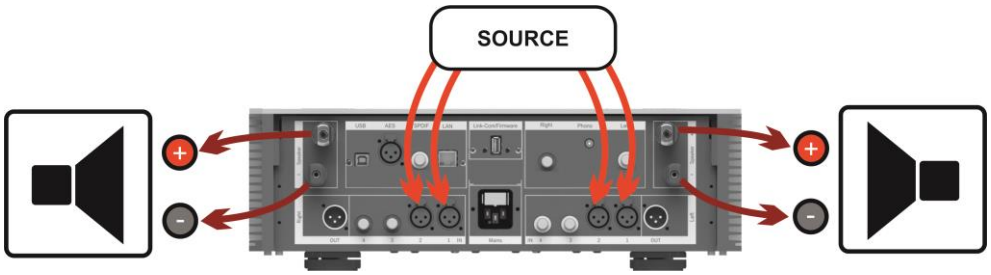
Settings for Multi-Amp mode mono, left channels of the source components connected to the left amplifier channel and right channels of the source components connected to the right amplifier channel. All 331s in Multi-Amp setup must be connected with the Link-Com interface. Ensure correct settings and cabling of all 331s before you power up.

Multi-Amp mode: OFF (Single-Amp: Stereo)

In the “standard” stereo setup the left/right channel of your source components and your loudspeakers are connected the left/right input connectors and speaker binding posts of the 331 integrated amplifier.

Function	Values	Remarks
MULTI-AMP	M-AM OFF	Set 331 to Multi-Amp mode M-AM OFF for “standard” single amp stereo setup
SRC-TYPE	SRC L&R	Source-Type SRC L&R gets automatically activated.

The SRC-TYPE function is not available if the MULTI-AMP mode is set to OFF.



6.7 Link-Com (G)

The Link-Com interface is required for Multi-Amp setups. It aligns the settings for the volume, balance and inputs among the connected 331s.

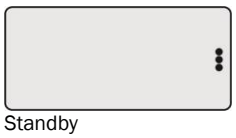
6.8 Firmware (H)

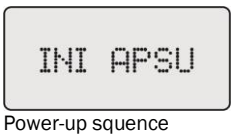
The USB input is provided for firmware updates only. For detailed instructions please refer to section 10 Firmware Update.

7 Operation

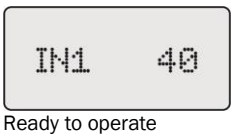
7.1 Power (I)

The power (I) button turns on the 331 integrated amplifier. The start up sequence takes a short while as the power supplies for the different sections of the circuit are initiated. Progress will be reported in the display (M). Once the unit is ready to operate it will show the active input and volume level in the display (M).


Standby



Power-up squence

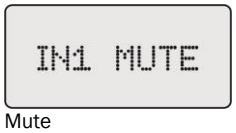


Ready to operate

If the 331 integrated amplifier is on, the power (I) button will put the unit back into standby (power consumption <1W).

7.2 Mute (J)

The mute (L) button disconnects or reconnects all inputs and outputs from the analog circuits of 331 integrated amplifier. While the unit is muted, the volume level cannot be altered and the DIM-Function is unavailable.



Mute

7.3 Prog (K)

The 331 integrated amplifier can be configured to suit the individual requirements of your audio system. Pressing the prog (M) button (de)activates the configuration menus.

7.4 Rotary knob (L)

The multi-purpose rotary knob is used to control the volume, select the input, dim the volume, and to select the configuration menus of the 331 integrated amplifier.

Operation-Mode

Turning the rotary knob (L) changes the volume.

Pressing the rotary knob (L) for less than 1 second (de)activates the Volume-Dim function.

Pressing the rotary knob (L) for more than 1 second activates the Input select mode.

Turning the rotary knob (L) while the unit is in input select mode will in/decrement the input.

Configuration mode

Turning the rotary knob (L) selects the desired configuration function.

Pressing the rotary knob (L) confirms the selected configuration function and activates the value range (3 LEDs lit).

Turning the rotary knob (L) selects the desired value.

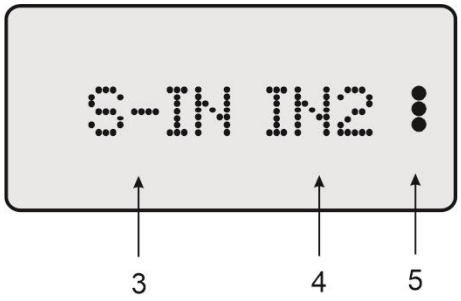
Pressing the rotary knob (L) confirms the new value.

7.5 Display (M)

Normal mode

1) Selected input: IN 1 to IN 4, PHONO, or DAC inputs
2) Volume level

Configuration mode



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

8 Configuration

Function	Values	Remarks
PWR-MODE Power-Mode: Defines start-up behaviour	PWR-NORM	Power-up with power-button, default value
	PWR-LINK	331 waits for external LINK Signal
	PWR-AUTO	Switches on automatically as soon as mains voltage is active.
START-IN Start-Input: Defines active input after switch-on	S-IN IN1	Start-Input: IN 1, default value
	S-IN PHO	Start-Input: Phono
	S-IN NET	Start-Input: Network
S-VOLUME Start-Volume: Defines the volume level after switch-on	S-VOL 10	Minimal Start-Volume
	S-VOL 30	Default value
	S-VOL 40	Maximal Start-Volume
DIM-VOL DIM-Volume: Defines the volume level of the DIM function	D-VOL 1	Minimal DIM-Volume
	D-VOL 10	Default value
	D-VOL 40	Maximal DIM-Volume
MAX-VOL MAX-Volume: Limits the volume level	M-VOL 40	Minimal MAX-Volume
	M-VOL 65	Suggested MAX-Volume
	M-VOL 90	Default value

Function	Value	Remarks
BALANCE Balance Defines the volume difference between the left and right channel	BAL <-9	Balance left 9dB
	BAL 0	Balance center Default value
	BAL ->9	Balance right 9dB
MULTI-AMP Multi-Amp: Activates the Multi-Amp Mode and defines the function of the 331 in the Multi-Amp system	M-AM OFF	Default value
	M-AM ST	Stereo
	M-AM ML	Mono left channel
	M-AM MR	Mono right channel
SRC-TYPE Source-Type: Defines which source channels are connected to the 331.	SRC L&R	Both channels connected, Default value
	SRC M-L	Left channel connected only
	SRC M-R	Right channel connected only
	SRC OFF	No source components connected. Input IN1 always active
SURROUND Surround-Input	SUR OFF	Surround mode OFF, Default value
	SUR IN1	Inputs IN1 to IN4 can be defined as surround-input.
SUR-VOL Surround-Volume Defines the volume level of the surround-input	SUR-V 10	Minimal volume level
	SUR-V 40	Default value
	SUR-V 90	Maximal volume level

Function	Value	Remarks
BRIGTHN. Brightness: Defines the brightness of the display	BR. LOW	Low
	BR. MID	Mid
	BR. HIGH	High, Default value
REMOTE Remote-ID: Defines the Remote-ID for the 331.	REM Pre1	Default value
	REM DAC	The 331's Remote-ID can be changed. The ID of the remote control has to be changed accordingly
	REM OFF	
PHONO-HP Phono High-Pass filter	P-HP ON	High-Pass-filter active, Default value
	P-HP OFF	High-Pass filter disabled
PHON-IMP Phono-Impedance: Defines the impedance of the phono MC input.	IMP 20	Minimal impedance
	IMP 100	Default value
	IMP 1260	Maximal impedance
D-FILTER Digital Filters: Selects the upsampling filter	D-F LIN	LIN: Linear phase
	D-F MIN	MIN: Minimal phase
	D-F LINA	LINA: Linear phase with apodizing Default value
	D-F MINA	MINA: Minimal phase with apodizing

Function	Value	Remarks
PHASE-EQ Phase-EQ: (de) activates the zero-Phase technology	P-EQ ON	ON: zeroPhase technology is active Default value
	P-EQ OFF	OFF: zeroPhase technology not active
POLARITY Polarity	POL 0°	Polarity in phase, Default value
	POL 180°	Polarity 180°, inverted
DEFAULT Default-Values Activates the default values for all functions.	LOAD NO	No action
	LOAD YES	Loads the default values.
	DONE	User configuration reverted to default values
FIRMWARE	FW-00001	Firmware version
	REV-0047	Firmware revision

9 Remote control

Button	Pre-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	-

<u>Change of Remote Ctrl ID:</u>

Press the respective buttons for approx. 5 seconds.

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

<u>Exchange of batteries (2 x AAA):</u>

- ⇨ 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

10 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 331 integrated 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 successfully loaded, the 331 integrated amplifier will be in standby mode.
- ⇨ Power up the 331 integrated amplifier.
- ⇨ After the 331 integrated amplifier has completed its start-up sequence, press the prog key.
- ⇨ Select configuration function LOAD-DEFAULT and confirm with YES.
- ⇨ Configure the 331 integrated amplifier to suit your requirements.

11 Troubleshooting

No Display	Check the mains connection, the fuse of your house installation, the fuse of the 331 integrated amplifier and the brightness function. For the DISPLAY-OFF setting, the display is switched off during operation.
No music	⇨ Check the cabling of your audio system ⇨ Check whether the correct input is selected ⇨ Check whether the source component is muted
PSU FAIL...	The 331 monitors all necessary supply voltages. If a supply voltage fails, the 331 will switch itself to MUTE with the corresponding error code shown in the display.
OVERCURRENT	If a current > 30 A is detected at the loudspeaker outputs of the 331, it switches to MUTE. The display shows ERR-OCR (right) or ERR-OCL (left). Check the wiring to your loudspeakers.
DC-PROTECT	If the DC offset of the input signal is too high the unit will mute the outputs and power down. The display shows ERR-DCR (right) or ERR-DCL (left).
HF-PROTECT	If there is HF oscillations in the amplifiers the unit will mute the outputs and power down. The display shows ERR-HFR (right) or ERR-HFL (left).

12 Service

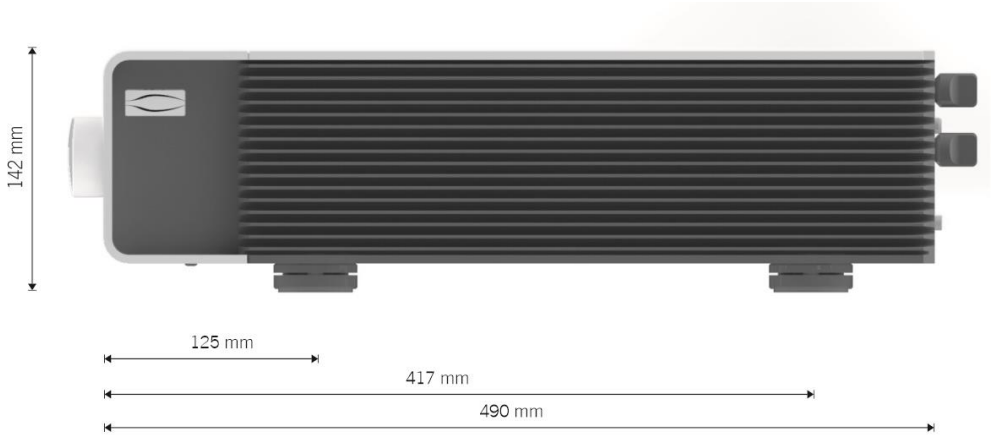
If you cannot identify or rectify a fault by following the troubleshooting measures, please disconnect the 331 integrated amplifier from the mains supply and contact your dealer.

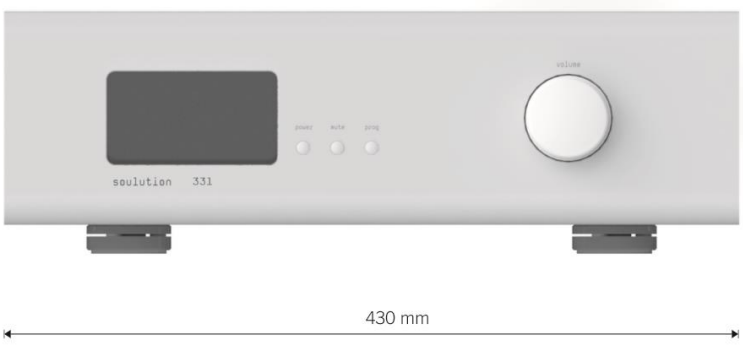
13 Specification

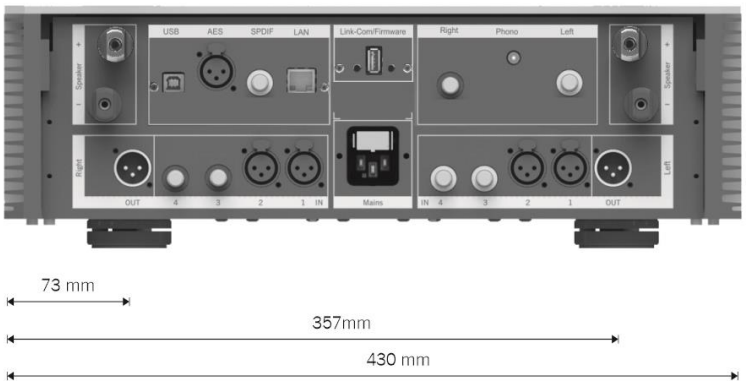
General		
Nominal voltage	Model 100-240V	100 - 240 V, 50-60Hz
	Model 220V/60Hz	220 V, 60Hz
Nominal consumption		2300 W
Consumption	Standby	<0.5 W
Inputs (IN 1...IN 4)		
Impedance	Balanced	5.8 kΩ
	Unbalanced	4.9 kΩ
Input sensitivity	@ volume 80	1.55 Vrms
Phono	**(optional)**	
Impedance		20-1‘260 Ω
Gain		60 dB
Input sensitivity	@ volume 90, 1kHz	0.5 mVrms
D/A converter	**(optional)**	
Sensitivity	SPDIF, AES/EBU	0.3 – 5 V
	USB, Network	0.4 – 2.5 V
Impedance	SPDIF	75 Ω
	AES/EBU	110 Ω
Main-Out		
Audio power	@ 8 Ω	120 W
	@ 4 Ω	240 W
	@ 2 Ω (< 5sec.)	480 W
Peak output current		30 A max.
Gain	Line input	-53...+26 dB
	Phono input	+17...+96 dB
Frequency response		DC-800 kHz
Phase shift	@ 20kHz	<-3°
THD		<0.0005 %
Spot noise	Input related	< - 140 dBV/√Hz
Damping factor		>5’000
Dimensions		
Dimensions		430 x 490 x 142 mm
Weight		ca. 18 kg

Technical specifications are subject to change without prior notification.

14 Dimensions







Spemot AG

Industriestrasse 70

CH-4657 Dulliken

www.soulution-audio.com

info@soulution-audio.com

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